

MICHIGAN FARMER.

Devoted to Agriculture, Horticulture and Science.

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TOLSON NURSERY.—George Baker, Proprietor. We
have received the catalogue of this extensive Nursery, the
grounds of which contain 200 acres, in the rich and fertile soil
of the Maumee Valley, Ohio. Its stock is too large for enu-
meration, but those wishing for choice varieties of any kind, and
for much valuable information may obtain it by sending for a
catalogue.

THE WOOL MARKET.

Since our December issue, wool has been pass-
ing through another crisis, between the producers,
and the speculators and manufacturers. The lat-
ter class of individuals in anticipation that a rise
was looked for soon after "New Years," had
quietly bought up quite a stock for use. The
consequence is that having enough on hand to
supply their immediate demands, they are not in
a great hurry to replenish, and the demand has
not therefore been so active as for some time pre-
vious, when they were obliged to buy to keep the
mill going. What was the result, why nothing
more than is always produced by a like state of
things, that the speculators have again set up the
cry that the prices of wool was coming down,
and some of the journals of the country true to
the speculative and manufacturing interest, which
supports them in their raids against the produ-
cers, have began to cry down wool for the mo-
ment, but things look different within a few days,
and some which were asserting that "the new
clip would be depreciated by holding on to the
old, and both coming into the market together,"
now hold the following language:

In expectation of activity and higher prices in
all descriptions of wool has now been postponed
until February, when it is expected if nothing
unforeseen happens, that the late upward move-
ment and active demand will be renewed. In the
meantime, there seems to be nothing to warrant
a lively trade, and buyers, though looking around
and inquiring, are purchasing very little, not feel-
ing disposed or seeing anything in the distance to
warrant them in paying the prices now asked.
They are more inclined to purchase from "hand
to mouth" than to lay hold of large parcels at
the present views of holders. The speculative
feeling has subsided, and this class of purchasers
are entirely out of the market. In the Dry
Goods market there is a general activity in Wool-
ens, jobbers and clothiers, are all operating with
entire confidence in the stability of prices, and
the amount of goods that has changed hands
during the first and second week of January is
larger than usual. In Woolens, as in Cottons,
the tendency of prices is upward; though, as yet,
we have heard of few instances in which an ac-
tual advance has been established.

There is a market scarcity of the leading makes

of Army Woolens. At present there is so much uncertainty about the prices of Kerseys, produced by the Clothing Bureau generally accepting goods below the army regulation standard, that manufacturers don't care to produce them. The result is that the markets of New York, Philadelphia and Boston, are almost clear of this class of Woolens, and there is every prospect of the Government finding the utmost difficulty in clothing the soldiers with regular army fabrics.

With the above facts, how can wool fall. "Army Woolens are scarce, and in fancy woolens and cottons the prices are upwards." How then can the prices of wool be downwards, when it is the materials from which the scarce goods must be manufactured? The whole thing is an absurdity, especially the declaration that the price of wool must come down, when the goods of which it is the basis, "are scarce and the tendency of prices upwards." Wool will maintain itself and advance as long as middling cotton is selling at 81a84c and Gold at 58½.

The Detroit Tribune claims that "some holders in the country who were induced to hold their clips at 75c have receded slightly." This may be the fact, but we know of no such instance by our advices, on the contrary, so far as we can learn, there is a more general determination to "stick for the last cent," with those who can afford it, than at any previous period. And we will stand by them—rather let them lock up their old and new clips together, and swear like the Army of the Potomac, that they will not stir an inch, until the enemy come to them and accept their terms.

Prices in Detroit range as follows:

Pure blood Merino, extra clean,	70a75c.
Mixed " " good order,	65a70c.
Canada long clean Fleece, - -	58a65c.
Ann Arbor - - - - -	63a72c.
Jonesville - - - - -	65a72c.
Grand Rapids - - - - -	65a70c.
Dowagiac - - - - -	65a70c.
Lansing - - - - -	73c.
Jackson - - - - -	70a75c.
Buchanan - - - - -	50a70c.
Niles - - - - -	65a70c.
St. Johns - - - - -	60a70c.

NEW YORK MARKET.

Wool has continued in good request, and the market is buoyant. The stock of domestic is computed at 2,000,000 lbs against 2,800,000 lbs last year, while the stock of foreign is 15,600 bales against 12,550 do at the corresponding period last year. The sales are 280,000 lbs native fleece at 77a88c. chiefly at 77a85c; 75,000 do pulled at 72a79c for super and extra; 175 bales California at 40a35c for inferior, and 45a48c for good to fair.

It will be observed by the above that there is 800,000 lbs less of domestic in city store than in

January 1863, with less cotton on hand or produced, wool must hold its own, and gain an advance in our opinion.

John L. Bowes & Bro.'s Wool Circular, dated Liverpool, January 2, 1864, says: The Wool trade may be considered in a sound state, remarkably free from speculation; stock moderate and consumption healthy.

BOSTON MARKET.

The Shipping List gives the following candid and sensible statement in regard to the Wool market, it says:

The first week of the new year has not been marked by any very decided activity in the Wool market. There has been considerable inquiry and buyers appear to be disappointed that purchases cannot be made on so favorable terms as a few weeks ago, while holders are also disappointed that buyers do not take hold more freely at what they consider fair market prices. Trade, therefore, opens with a little disappointment all round, but the features of the market remain precisely the same. Goods are wanted—manufacturers have small stocks of raw material and a few weeks are likely to develop a different state of things. Those who look for a rapid advance in prices will probably be disappointed, while those who look for a firm and gradually advancing market may realize all their anticipations. Very common and low grades of Wool have been rather neglected for some time past, and this description is dull, but all good and desirable lots of medium and the better qualities are wanted. The sales of the week foot up 520,000 lb fleece and pulled at prices ranging from 75 a 85c for fleeces, and 73 a 87c for super and extra pulled. Included in the sales were several lots of Minnesota, medium and low. Indiana and Illinois at 75 a 76c; 75,000 lb New York State at 79 a 80c; 120,000 lb Michigan at 81c; 67,000 lb medium Ohio at 82c; 7,000 lb fine Pennsylvania at 85c; and some considerable lots of pulled at 73 a 77c for supper, a small lot of ordinary super only selling at the lowest figure; extra from 77½ a 82c; and very good extra from 85 a 87½c per lb. Low grades of Canada are dull, particularly of pulled, while choice combing lots are quite saleable. The sales have been 35,000 lb at from 67 a 80c, but the latter price is a very extreme figure for this description and can only be realized for a very desirable lot of choice combing.

The Boston Commercial Bulletin of the 16th inst., quote sales of Wool for the week of 600,000 lbs, at a range of 75 a 80c., with 87½ a 90 for fancy clip. The Bulletin says, holders demand an advance of 2 a 3cts. on choice lots, and predicts that "the heavy wool trade during the next few weeks will be likely to force prices up more or less."

PHILADELPHIA.—The market has undergone very little change since our last report, but prices are firmer. The receipts and stocks are very moderate, but the manufacturers purchase sparingly. The sales comprise:—Fine Ohio fleece at (cash) 85c; common and 3-4 blood 79 a 82½c; common and medium Illinois 78c; mixed fleeces 75 a 80c; fleeces 77 a 78c; tub 82 a 85c.

PROVIDENCE.—The sales of the week have been 39,000 lb fleece at 77½ a 86c; 10,500 lb pulled at 75 a 82c; 26,900 lb foreign at 36c.

By all accounts it will be seen that Wool, notwithstanding an attempt to bear down the prices, is still firm and likely to obtain a fair advance up to the latter part of March, when buyers will shut down and hold off for the first rush of the new clip, this will naturally for a time cause a depression of prices. We should not advise producers to let the latter part of February and March slip on without disposing of their stock, unless they wish to keep it in store through another season.—W. S. B.

WORK FOR FEBRUARY.

ON THE FARM.

Prepare for the spring operations, help forward and invigorate as much as possible the workings of nature in producing a bountiful harvest. Shake up, draw out and spread manure on grass lands.—If there is a thaw clear your water courses, that you may get clear of too much water; and thus be able to plow and plant two or three weeks earlier. Make compost heaps in fields which need it. Lay plans for the entire season, so that men may be regularly employed at all times without crowding and confusion. Secure good farm laborers—the best are always engaged first—the highest price are often the cheapest, by saving watching and superintendence. A dollar or two more a month will often secure several dollars more in labor or its equivalent, good management. Open drains or channels in wheat fields which have become choked with snow or ice, should be cleared out on the approach of thawing weather.

Attend to the comfort of domestic animals and they will amply pay for the trouble. Horses with heaves may be relieved by feeding with wet, cut feed, especially if fine, well cured cornstalks.—Cattle should be kept off meadows. Pick over the apples in your cellars, and if they are beginning to decay feed them to cattle, horses and swine. Oil harness, examine your seed, and make farm-gates and ladders.

ORCHARD AND GARDEN WORK.

Examine round your fruit trees and see that no mice or other vermin have taken refuge there. Prune orchards. Cut grafts and pack them in moss or saw dust for spring use, taking care to have them correctly labeled. Send for nursery catalogues and select the best fruits, and forward your orders early, as the first choice from a stock is the finest.

Altho' stern winter with its ice-bound chains, exerts its influence over the soil, the gardener may find employment preparatory to commencing his operations of ploughing and planting, as

the season progresses. Perhaps the most important business at this season, is to collect plenty of manure; next to this, the gardener who intends to raise early plants for forcing or otherwise should see that his hot-bed frames are in good repair and ready for use; he should also repair his sashes, and make straw mats to cover them with. In preparing manure or other heating materials for hot-beds, or forcing-pots, let it be kept secure from heavy falls of snow or rain, and frequently turned over preparatory to its being made into a bed.

Previous to making hot-beds, select a situation on the southerly side of a close fence or wall, and not in any way connected with any building calculated to harbor mice, rats and moles, which are very apt to take up their abode in warm manure, to the great injury and sometimes destruction of the beds. It is necessary that the foundation of the beds should be drily situated, and not likely to be overflowed with water from melting snow, &c. When the bed is made begin and sow Tomato, Onion, Early Lettuce, Cabbage, Beans, Celery, Cucumber, Egg Plant, Carrot, Radish, Pepper, and such other seeds as a you may desire.—In cold beds well protected sow Peas, Potatoes, String Beans, and early Squash and Asparagus.

After the seeds are sown, the beds will require, constant attention; cover up well in cold nights, and give air at all opportunities, taking care to regulate the heat in the beds. If the heat is excessive, it must be decreased, and if it should become necessary to let off steam in cold weather, care must be taken to cover the aperture sufficiently to keep out frosty air.

PREPARING HOT BEDS.

Some gardeners make their beds on level ground, but it is always safest to make them in pits from eighteen inches to two feet deep, and have the locality well drained; in order to do this, the pits should be dug in the fall, if possible, or a heap of manure should be deposited on the ground intended for beds before the frost sets in; by this means the ground will be preserved from frost, and good earth may be obtained from the pits without any difficulty.

The fresh manure should be spread regularly in the pits to the depth of twenty or twenty-four inches; if the manure be in a good heating condition, cover it with six or eight inches deep of good mould earth; then lay on the sashes, and protect the beds from the inclemency of the weather. In two or three days the steam will pass off; it will then be necessary to stir the mould before the seeds be sown, to prevent the growth of young weeds that may be germinating; then sow the seeds as equally as possible, reserv-

ing a small quantity of the warm mould to be sown or sifted over the seeds. The beds should afterwards be managed as set forth in "work in the garden" above. This description of hot-bed is intended expressly for the raising of spring cabbage, lettuce, tomatoes, onions, radishes, and such other plants as may require early planting. Beds made earlier in the season, or for forcing, will require a greater substance of manure. These hot-beds should be prepared in the latter part of February or early in March, and those who desire early vegetable should begin to get manure, &c., ready to start their hot-beds.

STATE SORGHO CONVENTION.

THIRD ANNUAL SESSION.

Important Discussion on the Varieties of Seeds.

THE MANUFACTURE OF SYRUP AND SUGAR.

Valuable Papers Laid Before the Convention

THE LEGISLATURE TO BE PETI- TIONED TO GRANT PREMIUMS.

From Our Own Correspondent.

ADRIAN, Jan. 21st.

The third annual meeting of the Michigan State Sugar Cane Growers' Association, met at Adrian on Wednesday afternoon, in Bidwell's Hall. Considerable disappointment was felt at the sparsity of gentlemen present, considering the important nature of the objects of the Association, and the deep interest manifested by those who have undertaken, in the face of apparently unsurmountable obstacles, the cultivation and growth of the cane in the State. Only about thirty were present, including several who were not members. The following is a list of those in attendance:

John Richard,
J. L. Tallman,
Ira Stewart,
Jas. K. Webb,
J. B. Garlinghouse,
A. B. Hunt,
O. Gooding,
Wm. Haines,
R. Snell,
D. B. Kroh,
A. Coryell,
I. Post,

Wm. Taft,
J. T. Weeks,
W. Delmator,
W. S. Wilson,
L. M. Bodwell,
A. Sharp,
A. Southworth,
J. L. Standart,
G. W. Sullivan,
A. Sharp,
W. Tenbrook,
C. Cory.

The President being absent, Mr. Wm Taft, of Plymouth, Wayne county, one of the Vice Presidents, was called to the chair.

In the absence of the Treasurer, Mr O. Gooding, of York, Washtenaw county, was appointed to act in his stead.

The Executive Committee, through Mr. John Richard, reported the following as the list of premiums to be offered by the convention:

LIST OF PREMIUMS:

Best 10 lbs. of sorghum or imphee sugar	\$10 00
2d best "	5 00
3d best "	4 00
Best gallon "	6 00
2d best "	4 00
3d best "	3 00
Best evaporator	5 00
2d best "	3 00
Best sugar cane mill	5 00
2d best "	3 00
Best sample of sorghum seed	2 00
2d best " any other variety	2 00
Best and greatest variety of sugar made by one man	4 00
Best and greatest variety of syrup made by any one man	4 00

Your committee recommend that more classes be made, provided the funds of the society will warrant it.

ENTRIES.

The following is a list of the entries made for competition:

J. L. Standart, samples of syrup, numbering from one to eleven respectively.

J. L. Standart, for best and greatest variety of syrup.

J. L. Tallman, 1 gallon of syrup.

Wm. S. Wilson, 1 gallon of syrup.

Wm. Tenbrook, 1 gallon imphee syrup.

Wm. Tenbrook, 1 gallon Oomeesana syrup.

Wm. Tenbrook, 12 lbs. mush sugar.

W. Delematter, 1 gallon sorghum syrup.

D. B. Kroh, 1 gallon imphee syrup.

D. B. Kroh, 2 gallons sorghum syrup.

D. B. Kroh, 1 gallon imphee.

D. B. Kroh, varieties of syrup.

J. B. Garlinghouse, 1 gallon syrup, 3 entries.

Israel Post, pint of syrup, three entries.

J. T. Weeks, 10 lb sugar, 3 entries.

J. H. Standart, evaporator.

J. Richard, evaporator.

J. Richard, 1 gallon syrup, 2 entries.

J. Richard, Chinese cane seed.

L. W. Bodwell, 1 gallon syrup.

A. Sharp, 1 gallon syrup.

J. T. Weeks, best and greatest variety of sugar.

C. Cory, evaporator, Cory's improved.

C. Cory, six samples of sugar.

C. Cory, sample syrup.

A. K. Porter, 1 gallon syrup.

C. Cory and sons, samples of seeds, different varieties.

J. K. Webb, 1 gallon syrup.

CANE SEED.

The convention went into discussion on the different varieties of cane seed. The free expression of opinion and experience was invited, along with any suggestions which might prove beneficial to the interests of growers.

Mr. J. L. Standart, of Madison, said he had raised cane for the past four years from the different varieties of seeds. He had used the imphee largely and given it a fair trial, but his experience had established in his mind that the Chinese was preferable. It might not perhaps make as good sugar, but it was superior for syrup. He did not consider it profitable at present, with our limited knowledge, to engage in the manufacture of sugar. He would fall back on the Chinese variety as the best.

Mr. W. Delematter, of Liberty, Jackson county, had a variety with him which had produced an excellent crop, but he did not know the name of it. It commenced to sprout in 24 hours, which he had never seen the Chinese do. It was a very hardy variety, and easily cultivated.

Mr. J. Richard, of Raisin, said he was con-

siderably in the dark regarding the varieties. One man has one kind which he names himself, and a second has another which he calls what he pleases, until it became a question where they came from, and how they were obtained. He himself had used the different varieties of Imphee, which sometimes yielded very well, but he found that from the same seed which one year had yielded a plump and good variety, the next year had an altogether different class of seed. Taking it altogether, he preferred the Chinese seed, for a safe, hardy, profitable crop.

Mr. J. L. Tallman, of Tecumseh, had tried the African or Imphee, and failed totally, but in every instance had succeeded with the Chinese. It produced the best syrup, and by the saccharometer the largest quantity of saccharine matter. It was difficult to discriminate between the numerous varieties of Chinese seed, and desired information on that point. The question was, could the best seed be got at home, or would it have to be imported? He had produced from his variety six barrels of syrup, from seven-eighths of an acre, while with the Otaheltan, similarly worked, he had only received three barrels.

Mr. Richard again stated his preference for the Chinese variety.

Mr. Garlinghouse, of Raisin, had used for the last few years a variety called the Imphee, or African. It did not grow very large, but gave a very pleasant sweet syrup, and matured two or three weeks earlier than the Chinese. It also seemed to yield more in proportion to its bulk, and had a greater tendency to granulate and form sugar. He would not represent it as a distinct variety, but, as far as he had gone, he found it to work better and yield more than the Chinese.

Mr. Sharp, of Raisin had seen the last speaker's crop, and found it to be the best he had witnessed, except one, which had yielded forty gallons of syrup from twelve rods planted. He, however, had not made up his mind which was the best variety.

Mr. Tenbrook, of Fairfield, had cultivated for the last four years, and gave preference to the Imphee over the Chinese. He thought the Otaheltan a good variety, if it would only ripen earlier. He also thought there was some confusion as to classification of the seeds.

Mr. Richards thought the soil and location had a great deal to do with the differences of opinion he had heard expressed regarding the varieties.

Mr. Garlinghouse thought this was true, to a certain extent, but he did not think the Otaheltan could be matured at all.

Mr. C. Cory, of Lima, Indiana, found the Otaheltan ripen well and uniformly two weeks before the other varieties.

Mr. W. B. Cory, from the same place, thought the question of seeds one of vital importance. His experience, however, gave the Chinese the preference. He found that where the Imphee would produce from 80 to 100 gallons, the Chinese would yield 180 to 200 gallons. It also

granulated with greater success. The seeds embraced three distinct classes, viz: the Chinese, the African, or tufted variety, and the Otaheltan. They were distinguishable from the formation of the seed. He had found it very difficult to keep the Chinese seed pure and by itself. The plan he adopted at his mill was that when a good variety had been secured he would lay aside enough to last four or five years after deducting what was required for present use, and he advised growers to adopt this course. He had found that in seeds what one man would approve another would condemn, but the difference could be traced to the manner of working, carelessness, etc.

Mr. C. Cory gave preference to the Otaheltan variety. It would produce a larger amount of sugar, and more readily than the others. It granulated better, and he had known instances among his neighbors where the syrup had granulated so quickly that it could not be drawn from the casks. He had a statement with him bearing upon the different varieties of seeds which he would lay before the convention. He believed the Otaheltan to be a distinct variety from the Oomseeana, and much better. It thrives equally with the Chinese, and although the syrup is not so pleasant to the taste, it more than made amends in its sugar-producing qualities. He earnestly desired to have the best varieties secured, and sugar made a staple production of the country.

The following is the paper referred to:

CLASSIFICATION OF SEEDS.

To the Michigan Sorgho Convention:

RESPECTED SIRS:—Inasmuch as public attention has been extensively directed towards the new variety of cane called Otaheltan, and as we have enjoyed peculiar advantages for experiments and observations in relation to it, we beg the privilege of presenting on this occasion the following statements:

This variety of cane is entirely distinct, and in every respect superior to the Oomseeana, with which it is often confounded. (For a description of the latter, see Olcott on Sorgho and Imphee, page 205.) The Otaheltan has a different shaped and sized seed, grows much taller and larger, with fewer stalks and ripens earlier. In yield it is excelled by no other variety. The great attraction, however, of the Otaheltan cane we have found to be in its superior sugar-making properties. Besides the numerous good reports of it, coming to us from abroad, we have, ourselves, made actual experiments on it for two successive seasons, and hence have practical knowledge of what we here state.

In our first year's limited experiments with this cane, the syrup commenced granulating on the evaporator, and portions of it taken promiscuously from the lot, and kept in a warm room for twelve hours, became a solid mass of well crystallized sugar. The remainder, under poorer treatment, granulated to nearly the same extent. That this production was not of an inferior grade, we have the enlightened testimony of many experienced judges. Mr. Witherell, of the Chemist Department at Washington, having duly examined the same, pronounced it by far the finest in appearance and test of any samples from the Northern canes yet presented to that office. This much in relation to our first year's acquaintance with this much suspected Otaheltan stranger.

Our second year's experiments, notwithstanding extreme droughts, early frosts and

damaged canes, have been equally successful. In these numerous experiments we have found quite uniformly in our more matured canes, the same easy natural tendency to granulation. Sample after sample that we have taken from different lots of Otaheltan syrup at the time of manufacture, and retained in a warm temperature, have soon become solid with sugar, while other portions of the same lots have extensively granulated without any further care or facilities.

In short, from what we have already seen and known in relation to this species of cane, we can but indulge in the pleasing hope that, with due attention to the subject, its choice sugars will soon be numbered with the staple productions of our country.

Respectfully submitted,

C. CORY & SONS.

Lima, Indiana, Jan. 30, 1864.

Mr. L. W. Bodwell, of Ann Arbor, planted with Otaheltan on the 15th of May, and with Chinese on the 30th of June. About the middle of September the Chinese had advanced fairly, the Otaheltan was then worth nothing, and he cut it up for fodder. Both were injured by the frost.

Mr. J. W. Benedict, of Raisin, in setting up apparatus last fall, had extensively observed the thrift of different varieties, and invariably found the Otaheltan much behind the Chinese. He had made up his mind that it was not adapted to this climate.

Mr. Ira Stewart, of Macon, also preferred the Chinese. Our seasons are too short for the Otaheltan.

Mr. C. Cory, said that the Otaheltan was often confounded with the Oomseana, but they were distinct varieties. The Otaheltan grows tall and strong and stands the wind better.

Mr. A. B. Cory said the Otaheltan grew better on prairie land.

Mr. Sharp had bought both varieties, but could not tell the difference between the seeds. The Chinese, however, grew faster and headed out sooner.

Mr. Standart had planted some seven different kinds, including the Otaheltan. During the drouth it stood still while the rest grew about two feet, but when the rain came it grew very fast. As far as it had advanced, until nipped by the frost, it was a good variety.

Mr. Taft planted three kinds and found the same thing. It was also from two to three weeks later in ripening. Thought he would like the variety if it would mature sooner.

Several other gentlemen gave their experience, nearly all giving preference to the Chinese variety.

The convention then adjourned till 7 o'clock.

EVENING SESSION.

The convention met again at 7 o'clock.

GROWING AND CULTIVATION OF THE CANE.

The Chairman stated that the next question would be the growing, cultivation and management of the cane.

Mr. Bardwell wanted the ground plowed deep to prevent drouth, the seeds planted shallow and the hills made plain. Then go through and sow plaster on the hills. Then use the plow, and follow with the cultivator. If the ground is

left till the corn is up, great difficulty is experienced from weeds. Cultivate till the corn is about three feet high and then let it grow. In answer to a question he said he did not believe in suckering, as it exhausted the plant in its efforts to renew suckers.

Mr. Stewart, of Macon, said that when he first commenced he was much bothered with pigeon weeds. He first ploughed the ground and let it remain till warm, and when ready dragged it freely, and then marked out and planted, then took a hoe and hoed round the hill till it began to grow. When the cane gets high it will not be troubled with weeds.

Mr. Tallman, of Tecumseh, thought it would be well to cultivate it before it comes up, it thus lets in the air, and it matures faster. He objected to cultivating it after it came up, as he had experienced and found it injured the roots. He first soaked the seed, plastered it, and planted shallow. With regard to manure he was doubtful. The best cane he had grown was on the side of a hill, sandy soil, where no manure had been, but as he had not experimented fully, he would not offer an opinion. He had grown cane four or five years on the same ground, and he found no difference except this last year. He was in favor of planting early.

Mr. Sharp said he last year sowed about an acre along with some oats in April. Nearly every seed came up. He had soaked it about a week, and placed it between cloths, and when he planted it some was sprouted. Very little of it grew until after rain, when the seed which had not sprouted began to grow. He thought from this that it was a hardy seed.

Mr. Cory said his method was to put it into warm water and keep it warm. Then put it in a sack, and keep it still in a warm place. Keep off the wind, and in twenty hours the seeds will be ready for planting. He gave an instance in which a gentleman had planted for five days, and the seed had not sprouted. He put it through this process, and in a few hours it began to grow. He would plant about half an inch deep, and on a ridge.

Mr. Cory, Jr., gave an instance in which the corn was planted east and west, on the sunny side of the ridge, and that crop was ready for cutting about the middle of August. Seed planted in the fall would remain in the ground and grow the next spring.

Mr. Corey explained, that in adhesive soil he would plant half an inch deep, in light, sandy soil, perhaps an inch.

Mr. Richard's plan was similar to the rest in soaking and planting. He wanted a southern exposure. Then have it cultivated and manured into good condition. Then mark it out four feet apart, plant shallow. As soon as it begins to "point" throw a little plaster on it, then use cultivator, and hoe it north and south, in order that the sun may come in between it.

Mr. Tallman did not like the plan of hoeing north and south.

R. Snell, of Lima, Michigan, came mostly to hear what others had to say. He had cultivated it for some six years, had planted on different kinds of soil, clay and sandy, manured and unmanured, had cultivated and hoed it, but there was one method which he intended to adopt. He planted four feet one way and two another, two seeds in a hill. His opinion is that it requires a strong soil to produce a good crop. The manure and ground, to be mixed, and then plowed deep. The roots, it is well known, grow very deep, and the root being the mouth that feeds the stalk, it necessarily follows that the sustenance must reach that mouth. He was never so successful as when he plowed deep and had his ground in good condition. When three feet high, let it alone, as molesting the roots destroys its vitality. When the stalk is feeble, loose the ground with a hoe, so that the air may get to the roots.

Mr. I. Post, of Adams, wanted to get at what constituted the richness of the soil. He had a piece of ground which had received the wash of the barn-yard for four successive seasons. This piece, he found, did not diminish in crop, while a piece adjoining, which was not manured, had diminished in ratio. He was of opinion that as soon as it was possible to put in the shovel plow to do so, but if the ground was not rich all cultivation was in vain.

Mr. Snell, of Ionia, sowed for a neighbor on one-fifth of an acre three bushels, and this produced a fine, sweet quality of syrup. The salt was sown and then plowed in the ground before the seed was put in.

Mr. Richards found that wherever manure was directly applied the quantity and quality of syrup was diminished.

Mr. Standard, of Madison, had planted for four years the same piece of ground with the same class of imphee seed, with different results last year. He did not want to work his ground after the cane had got two and a half feet high, as the cultivator would destroy the roots.

Mr. J. W. Benedict, of Raisin, had found it much better to put the seed in the ground and let it sprout then. He cleared the ground off so that it became a little moist and then planted, and had never failed until last year. He would not manure hereafter but plant in sod ground. He believed that good sod soil would raise healthy corn, and would be found to produce at less cost.

Mr. Snell could not understand why, if other grain grew better with manure, why not cane.

Mr. Benedict said it was possible to manure too highly. If the ground was too rich the juice was too much impregnated with vegetable matter, and consequently required more boiling, which reduced the quantity of syrup.

Mr. Cory, Jr., said that a great deal of the acid in the juice could be neutralized, by putting on a compost of lime and ashes, and plaster during the growth of the plant.

HOW TO HARVEST THE CORN.

Mr. Richards said that about the time of the first white frost he began to cut, letting it

stand in stooks till cured, and then put it under cover. He then had that stripped and the tops taken off.

Mr. Tallman intended for the future to strip the cane before cutting, as he could in two hours strip as much as four men could in a day after cutting.

Mr. Stewart approved this course, as he found that the cane was much better after being stripped in the field.

Mr. Richards had tried that process, but was unsuccessful. If it could be stripped, cut and got in when dry, it might do very well, but if it was wet it would be injured.

Mr. Taft thought the process of preparing the cane for the mill one of the most expensive in the culture. It required attention all at once, and should not be handled too roughly. He hoped some machine would be invented to facilitate the operation. He was also of opinion that the cane could be as well cared for in the field as under cover, and would have it stripped as soon as cut, as in this manner he secured from one to three tons of fodder per acre.

Mr. Bodwell wanted to know in the case where cane was frozen, as it was this year, if it would not be well to cut it, and have it laid upon the ground, covered, to protect it from the sun and heat, and kept, say at 40° Fahrenheit. He would like to hear some one's experience on this point.

Mr. Sharp said his was all frozen this year. He had it cut and placed in windrows, without stripping, and laid upon the ground with the butts to the North, placing another bundle lengthwise upon this, leaving the tops bare and protecting the butts from the sun. By this means the temperature was equalized.

The convention then adjourned till next morning, at 9 o'clock.

SECOND DAY.

THURSDAY, JAN. 31.

The convention met this morning at ten o'clock and proceeded to the appointment of committees for receiving the samples and machinery offered for premiums, and re-election of officers for the ensuing year.

Several excellent samples of sugar and syrup were added to the collection during the morning.

ELECTION OF OFFICERS.

The committee to whom were referred the appointment of officers, reported the following for approval of the convention.

President—Wm. Taft, Plymouth.
Vice Presidents—Samuel Lothrop, Adrian;
J. S. Tallman, Tecumseh; Richard Snell, Lima,
Washtenaw.

Secretary—J. L. Standard, Adrian.
Treasurer—Arthur Sharp, Raisin.
Executive Committee—John Richard, Raisin;
O. Gooding, York; J. W. Benedict, Tecumseh.

The report was adopted.

VIEWING COMMITTEES.

The committee appointed to select Viewing Committees reported the following gentlemen:

On Sugar—O. Gooding, York; John Tallman, Tecumseh.
On Syrup—W. Wright, Adrian; J. B. Hunter.
On Evaporators and Seeds—J. W. Benedict, Tecumseh; W. Delemater, Jackson.

The report was adopted.

Considerable discussion ensued as to the propriety of admitting models of machinery to compete with machines which have been in use. It was finally resolved that they should be admitted.

While the committee were at work the convention opened the subject of the process of making syrup and sugar from the cane.

THE PROCESS OF MAKING SYRUP AND SUGAR.

Mr. Cory, of Lima, explained partly the method adopted by them at the manufactory in Indiana, which is similar to that generally in use, using lime to neutralize the acidity of the juice. He also read a letter from Mr. W. H. Belcher, of Chicago to Mr. J. A. Hedges, formerly of Cincinnati, on his process of manufacturing. As it is of considerable importance we make a few extracts:

The raw syrup is reduced by water to twenty or twenty-two degrees Baume; lime water is used to neutralize the acid, which more or less abounds in raw syrup. The syrup thus treated is defecated by steam heat, the scum taken off, and the liquid allowed one or two hours to settle, after which it is again warmed up by steam and filtered hot, through bag filters, then filtered through bone coal, and as soon thereafter as possible the syrup is boiled in a vacuum pan to the proper degree of density of good syrup, which is thirty-eight degrees Baume, at the temperature of 160° Fahr., and which are about the degree of density and temperature at which the syrup is completed in the vacuum pan.

Mr. Cory, in answer to a question, said that the solution of lime used was prepared from the best lime, and made about the consistency of syrup, using about two table spoonfuls to a barrel of juice. The quantity used, however, was to be determined by the amount of vegetable matter contained in the juice.

Mr. Richard was not in favor of refineries. He considered them only of use when sugar cane growing was in its infancy. Use the best apparatus, and evaporate a small quantity at a time. Remove all impurities, and the result would be a choice article of syrup. He considered re-boiling injured the color of the syrup.

REPORT OF THE COMMITTEE ON SUGAR.

The Committee on Sugar reported as follows:

Your committee would recommend Mr. Weeks' sample as entitled to the first premium. Mr. Cory's and Mr. Week's samples are so nearly equal, that we cannot decide between them, and would recommend that the second premium be awarded to each, and also that Mr. Weeks' was of the best and greatest varieties, from Columbia, Jackson Co. Mr. Weeks, who took the first premium, described the process used by him in the manufacture of the sugar exhibited by him. The sugar was made from the Chinese and Otaheitan cane, and made on Cook's evaporator. The syrup was boiled down to 85° or 86° by the saccharometer, then put into tin pans and set in a warm place to granulate. It was stirred once in two weeks, when it became about one-half sugar, then put into a steamer and under a press. When the molasses was out he made a solution of coffee sugar and stirred it together, then pressed, dried and granulated it.

Mr. Cory, sen., read the following paper on the articles exhibited by him:

To the Michigan Sorgho Convention:

The several lots of sugar which we exhibit on the present occasion are purely of the Chinese and Otaheitan varieties. They are in their raw and unrefined state, and are designed to show the standard which we have been able to reach in a plain, easy, cheap and rapid method of clarifying and condensing these juices of the Northern canes. In its manufacture no chemical or foreign agents were used, except a small quantity of lime to neutralize in part the acidity of the juice, and to aid in its defecation, neither was it subjected to the long, laborious process of gradual heating, straining, filtering and re-boiling, usually set forth in books on this subject. The clarifying and evaporation are done at once, and most rapidly, while passing in a continuous thin current over the intensely heated surface of one evaporator. By this process the scum and other impurities are precipitated to the surface of the fluid, and thence to the sides of the said evaporator, where they remain unagitated till removed. While, in the meantime, the liquid thus freed from its impurities, passes forward to the other portions of the pan for still further refinement and condensation. Strictly speaking, it is purified and transformed by fire, than which surely no other agent can be more rapid and efficient. The mishaps of the past season, in the form of drought and early frosts, have delayed the large sugar anticipated from our newly introduced canes. The public need not, however, by any means, despair of seeing the full accomplishment of this desideratum. Of the correctness of this position the experience of even the past unfavorable season has given many reliable assurances.

In connection with the sorgho enterprise, growing out of it, we have found ourselves and neighbors somewhat advanced in still another pursuit of almost equal importance. Some three years since while concentrating cider for its various uses, we unexpectedly transformed it into a beautiful and pleasant jolly, since which the experiment has been repeated by ourselves and others in this vicinity in an extended scale and with most happy results. Our process of manufacturing these jellies is similar to that of making syrup from the saccharine juices, to wit: clarifying, condensing, etc., as previously stated. The enterprise is an entire success and we take pleasure in commending it to the attention of this society.

AFTERNOON SESSION.

Convention met at 3 o'clock, Mr. Cory in the chair.

RESOLUTIONS.

Mr. A. Richard offered the following resolution which was adopted:

Whereas, Great and marked progress has been made in this State in the manufacture of both sugar and syrup from the Chinese and African cane during the last four years.

Resolved, That in the opinion of this convention, the State should offer a premium for the best plan, reduced to practice, of manufacturing sugar from the several species of northern cane.

AWARD OF PREMIUMS.

The Committee on Implements reported in favor of awarding the premium to Cook's evaporator, owned by Mr. Richard, as by examination of the different specimens, those made on said plan are more pure than the other samples presented.

Mr. Standard showed a model of an evaporator, called Drake's patent, which was so con-

(Continued on Page 291.)

For the Michigan Farmer.

EDUCATION OF FARMERS.

In a State where so much has already been done to favor the education of all classes, so many and such easy facilities offered to every one, it would seem unnecessary to agitate the question of Education any further. But very unluckily for the well being of mankind generally, they do not grasp at the good things so temptingly offered; they fear innovation, and shun the rich feast. They would rather hold to the old and time honored customs and practices of the past, because they have been sanctified by passing through the hands of several generations of their forefathers. It is, no doubt, laudable to cherish and preserve feelings of veneration and respect for the works and teachings of those who have begotten us;—but when we allow that feeling to act as a barrier to progress and improvement, it becomes a perverted sentiment, and works only detrimental to ourselves, and all within our influence. Among agriculturists and rural people generally, this disposition to frown down and extinguish every exertion, or progressive movement made tending to alleviate, improve or advance their condition, or promote their welfare, is everywhere evinced.

Farmers have so long been accustomed to plodding along through dirt and mire, without ever allowing the rays of intelligence to reach into their business, that it has become a second nature with them. Among the best and most successful farmers, the idea that anything but *work*, accompanied with *tact* and *management* as is necessary, is scouted, their exertions are all bound up in the simple routine of their farm labors. So long as this course is pursued and insisted upon by farmers, so long must they remain when they are.—Wealth may give them importance, but that influence over the affairs of this world which intelligence always yields, will never be theirs.—Now we claim that there is natural ability enough and are artificial acquirements enough among the rural classes at present to accomplish the great work—the overthrow of the dynasty under which they have so long been held in subjection.

Agriculture—including all the various branches of the business—is the great and principal business of mankind. It is that upon which all, either directly or indirectly depend for subsistence. This is an axiomatic or self-evident truth. The wisest and best of men have made it their occupation. It is an honest, useful, healthy and independent calling, and it may be made a very pleasant one. There is enough in it and connected with it to exercise the highest genius to its fullest extent. And yet to describe the various ways and means that people devise to get a living in some other

way, than by cultivating the soil, or raising it—how many artifices and stratagems are made use of by men to obtain even a meagre living through some employment about a city, and to keep themselves out of the country and off of the farm, would fill a volume. Would it not be an intricate task, sufficiently so to employ all the “finese” of a lawyer to describe its circumlocutions, that the farmers’ produce passes through before it can become nourishment for all the various classes of people that *infest* society? Let us pause then, and look about us. We find every element that can be brought to our aid in the social and political advancement of the agriculturist is latent or hidden. The machinery is all in existence, but it requires putting together. Like the German watch manufacturers, one family are engaged in making one wheel, and another family another wheel, and so on until the works of a single watch are distributed over a whole State. What is especially wanted, is that influence, which will bring the various parts of this machinery together in some form in which it will *run*. Now I have come to that point where additional education is required—not a greater familiarity with the rules of arithmetic, or the science of language, but we must learn more about ourselves, and the various interests and outside influences connected with our business; learn our rights and the privileges we ought to enjoy, learn to properly estimate and employ the great power that lies in us to do good, and suppress the wrongs which our present lethargy encouraged, and learn a great many other things which I am not now able to suggest, all tending to the elevation of agriculture to its proper importance among the many business of life, and agriculturists to their proper sphere of influence and usefulness in society.

Who will commence the work? When shall it be commenced? There must necessarily be organization and combination. To bring about a general understanding and interchange of sentiment is the first object, and to do this there must be some system of general association adopted. It is not a work for individual enterprise. We have before suggested how this might be accomplished in this State—through the agricultural societies already formed. Will not the officers of those societies take hold of the work this winter? We feel that they would meet with the hearty co-operation of a large portion of the more intelligent farmers of the State—enough to insure a successful commencement. Is it not worth a trial? E. W.

IDA, December, 1863.

—Some Elliot, Me., farmers, who were unable to get upon some low swamp lands on account of the abundant rains of last summer have lately been removing the hay upon the ice.

INFLUENCE OF THE ATMOSPHERE

On the Soil, and on the Animal and Vegetable Kingdoms.

[Read before the Concord Farmers' Club by J. C. FARMER, and reported for the *N. Eng. Farmer*.]

MR. PRESIDENT:—As well might we expect to live and flourish shut up in a glass receiver, with the air exhausted, as to think of any living thing existing on the face of the earth without the atmosphere. Of the fifteen elements that made up more than 99-100 of all known matter, more than one-half are gases, or can be converted into gas. The atmosphere is but a combination of gases, varied somewhat by heat, cold, and other causes.

When Solomon said, "There is no new thing under the sun," his idea might have been, that the elements which compose the leaf, or our bodies, to-day, are the same elements that composed leaves or bodies thousands of year ago. These elements can be changed, but not destroyed.—Burn a stick of wood, for instance, and you but change a solid into a gaseous substance, which combines with the atmosphere and is then food for animal or vegetable life. The same is true of all organic matter; the ash only remains. The part that has disappeared will return, perhaps in rain, or shower, to fertilize the soil, or refresh our bodies; or, it may float in the air, and be taken up by the leaf or rootlet of some plant or tree. The elements of creation are the same throughout the world; but may be of a different combination, and affected by heat or cold. Were it not so, what would be the condition of the earth now? The calculation has been made that a thousand millions of human beings die every thirty years, and in addition, there are all the beasts of the field, the fowls of the air, and all the vegetable productions of the earth, that are as thoroughly consumed as by fire. Were it not for the decomposition of all these bodies, by their being turned into gases, and absorbed by the atmosphere, thence reorganized into living things, life to all, human, animal, and vegetable creation, would be extinct.

I trust I shall be pardoned if I make a few extracts from more able writers than myself, as well as attempt to show the effect of the atmosphere indirectly on the soil, by showing how it affects animal as well as vegetable life. Loudon, in his "Encyclopedia of Agriculture," says, "manure is useless in a state of solution, if the water so abound as to exclude the air; for then the fibres, or mouths, unable to perform their functions, would soon decay and rot off." Any one of common observation may see the truth of the above quotation. Nearly every spring, in some part of our oat or wheat fields, the grain is crowded out, as it is termed. So sure as the water excludes

the atmosphere from the roots, the plant dies, but it would as surely die if the air were kept exhausted by any other means, as it would to keep the soil covered with water. But he further says—"Water is known to be a condenser and solvent of carbonic acid gas, which always exists in the atmosphere, and is carried down by rains and snow to fertilize the soil; animal and vegetable substances exposed to the alternate action of heat, moisture, light, and air, undergo spontaneous decomposition, which would not otherwise take place."

Speaking of pulverization, he says, "A portion of atmospheric air is buried in the soil. This air, so confined, is decomposed by the moisture retained in the earthy matters, and heat is given out during these processes, more especially if manure has been added at the same time, and the process of fermentation will go on faster when the soil is loose, and the interstices filled with air, then afterwards, when it becomes compressed with its own gravity." Of aeration, or summer fallows, he says, "For this purpose if the soil is laid up in large lumps it is evident that it will receive more heat, by exposing a greater surface to the atmosphere. Clay soils, it is said, may be heated to 120°, which may, in some measure, alter their absorbent power, as to water, and contribute materially to the destruction of vegetable fibre, insects, and their eggs."

In New England, I think well of fall plowing, particularly of clay, peat, and hard, stony soils, which results in a free admission of air and water, thereby favoring minute mechanical division, the water freezing and occupying more space in a solid than in a fluid state, and thus earthy matter is rent asunder, and the soil crumble gradually to a fine mould.

It is a well known fact, that the atmosphere warms the soil, when light, and well pulverized, to a greater depth than it does one that is more tenacious.

Thus you see that in addition to the gases absorbed by the soil, you have it warmed, and rendered far easier of cultivation, which is a great advantage in all clay soils. Peat, clay, and black soils, are absorbents of atmospheric gases. We cannot but acknowledge nature's powers, heat, cold, moisture and air, as far superior to any instrument of man's invention, for breaking down tenacious matter, and rendering it fit food for vegetable growth.

How often we hear persons speaking of meadows: One has a meadow, situated on a gentle rivulet, with a fine, decomposed vegetable soil, producing abundantly whatever crop is on it, while the other complains that his is not worth a cent. He says his is but a parcel of old sticks, leaves, and grass! My friend of the sticky meadow,

down, what is the difference? Have you ever let nature into your bog hole, with her all-absorbing atmospheric team? No? Go, then, and admit her. All you have to do to have her commence her operations, is to clear out your old ditches, and dig new ones, until you have taken off all the surplus water, and she is there, without money and without price, entering every crevice as fast as the water leaves it, and will continue her work until it is accomplished. She sows no seed as man scatters it, but millions are borne by the gentle zephyrs and terrific whirlwind, and whatever is there, she causes it to spring up, and in time to flourish like a green bay tree. There can be but little difference in the elements of the meadows. The one is finely decomposed, fit food for vegetable months, while the other is too coarse for vegetable jaws to masticate.

As climate is a state of the atmosphere, I shall not attempt any discrimination, but will try in an indirect way to show its effect on some of the animal and vegetable creation. I have it from good authority, that if sheep, raised in a cold climate, are taken to near the equator, in Africa, the wool of the progeny, if suffered to go much past shearing-time, soon begins to fall off, and hair grows in its place, and will ever remain so. Another example of the effect of climate can be seen in the fleet Arabian horse. When brought to England its offspring soon begins to grow stouter, and gets to be, in a few generations, stout, heavy horses, and *vice versa*, when taken back to Arabia. The effect of the atmosphere does not end with domestic animals. Compare the fur of the polar bear, or other quadrupeds of the Arctic, with those whose home is near the equator. You see in the effects of climate the wisdom of Him who adapts means to ends.

I cannot close my remarks on the animal creation without saying one word about the bird or insect. Who has not noticed the class of birds that take their food on the wing? At times you behold them high in the air, twittering their merry notes. Again you see them in a more silent state, just skimming the surface of the earth. And what of all this? It but shows the state of the atmosphere equally well with the barometer. Insects cannot easily rise in a cold, damp atmosphere, and it is certain that if the swallow wants his food he must go where he can find it. Hence his moody state, because the insects are under the leaves grass to protect them from the cold air, and he cannot get them.

My knowledge is too limited to explain the chemical effect the atmosphere has on animal or vegetable creation, but of the truth of the above statement I have no doubt. In regard to vegetation, I will state one fact that came under my own observation.

A few years ago I noted down the weather for a few months, and in that time my peach trees were in full bloom. The wind being in the north-east for fourteen consecutive days, I noticed that the blossoms remained on the trees longer than usual. This drew my attention to the subject, and I watched the result, which was nearly a total failure of the crop; the peaches never formed. The germ of the young peach turned yellow, and soon fell off. The causes of this, in my opinion, (and that opinion is corroborated by good authority) is, that the cups that contain the pollen never open in cold, wet weather, particularly when the wind is in the north-east. Therefore, there is no impregnation, and thus the truth of the old adage, "A north-east wind blasts the fruit when in blossom."

The above remarks I hold to be correct in regard to all fruits, but as they do not all blossom at the same time, and as many varieties have a succession of blossoms, we do not notice the effect of the atmosphere on them.

Strange as it seems, nevertheless I believe it to be strictly true, that a cold atmosphere is as essential (some part of the year) to produce a good crop of what we term English hay, as manure. Some may ridicule the idea, but you know that when you get far enough south for the ground not to freeze in winter, you are beyond the cultivation of the best grasses, as they will not grow except in a feeble and stunted way.

Different plants and animals require different food, and a change of atmosphere demands different food for their support. There is wisdom in nature's laws.

The growth in a cold atmosphere is conducive to fat-making principles, while a warm atmosphere possesses more gluten and muscle-making properties; each needed most where nature causes them to exist. Oil for the Esquimaux, and vegetables for the Equatorial regions.

HEN MANURE.—If properly saved, the manure of fowls is more valuable than Peruvian guano, which costs \$100 per ton. It should be composted with charcoal dust, dry muck, mould from the woods, or ditch and road scrapings; these may be spread over the floor of the poultry house, immediately under the roosts, and occasionally the floor should be sprinkled with slaked lime, which will absorb all bad odors, and together with frequent whitewashings of the premises, prevent the accumulation of vermin, so destructive to the health of fowls. The house ought to be frequently cleaned, the manure put into barrels, and fresh compost added. Thus managed, the hen-house becomes the farmers' laboratory, where guano, of the best quality may be annually manufactured, sufficient, where much poultry is kept, for all the wants of the farm.

For the Michigan Farmer.
INCOME TAX.

CENTREVILLE, St. Jo. co., Mich., Dec. '63.

Messrs. Editors,—There is no subject at present on which the farming community need information more than the Income Tax Law, and if you would publish some plain directions for the guidance of farmers in making their returns you would confer a favor.

Is there any uniform set of directions to Assessors? Farmers do not generally understand as to what is liable to taxation and what is exempt by the law. Scarcely two Assessors can be found here that assess alike, and in no two States can I find that the assessment is made the same. One values Cows at \$12, another at \$30. Some allow a deduction for board of farm laborers while others do not.

The directions issued last May to the assessors of Illinois were to exempt all hay and grain consumed on the farm, taxes, amount paid for labor on the farm, value of board of laborers, rent of farm, insurance, repairs, and interest on encumbrances on the farm, besides \$600 exempt by law.

New-York assessors exempted taxes, insurance, repairs, fertilizers, and seeds purchased, amount paid for hired labor, \$6 per month for subsistence of laborers, shoeing horses and cattle, repairs on agricultural implements, interest on incumbrances of farm, the cost of grain, and feed purchased for subsistence of stock.

The assessors here taxed all hay and grain raised, and made no allowance for what was consumed on the farm, nor allowed for the board of laborers, or repairs of farm and implements. The difference in the modes of assessing between Michigan, and New-York and Illinois, operates unequal and unjust. Take for instance, a farm that produces 100 tons of hay and 2000 bushels of corn, which is all fed to stock on the farm—sheep, young cattle and horses, fattening cattle and farm teams.

Now, by the rules of New York and Illinois the assessor taxes the increased value of the young stock for the year past and the sales made; but the Michigan assessor taxes all hay and corn raised, the increase in value of stock and all sales made of stock, is increasing the tax here two and three-fold over the tax as assessed there. Hay here was valued at \$8.00 per ton and corn at 40 cents per bushel, when our assessment was taken, making \$1600 additional in Michigan.

Some difference should be made in the value of stock and farm products in different localities, but it should not double in a mile, nor should hay and grain be assessed at twenty-five per cent. above its value. Often in parts of the country

distant from towns or railroad, there is no sale for hay and coarse grain, and the cost of drawing to a market is equal to the price obtained after the farmer reaches it.

J. H. GARDNER.

CULTIVATION OF FLAX.

Cotton, wool, silk and flax are the necessary attendants of civilization. Possessed in their varied combinations, they mark the progress of mind in the arts. Either, alone, would not be sufficient—neither must be “king.” Combined, they are republican in tendency, and a basis of independence. A country like our own, which can produce all of them, and transpose them into such endless forms of beauty and comfort, must be great, intelligent and powerful. While cotton, by involuntary labor, was controlling commerce, that part of the nation engaged in its production made little intellectual or moral progress, and the whole nation suffered. Rebellion has severed the grasping, gigantic power of cotton. Though for a while dependent operatives must suffer for bread, the result will be most favorable. Mark the thrift of the wool-growing interest. The North and the West have seized the favorable moment, and grand results are following. The hills and valleys are teaming with choicest flocks, and wealth is magically distributed among the hardworking yeomanry of this great nation. And now another chance opens to stimulate to greater activity and excellence the ordinary agriculturist. The demand for flax brings a promised reward to the door of every man who holds an acre of land. And after a fair trial, should the cultivation of flax not prove remunerative, still the thought and effort necessary to determine that fact will have intellectually benefitted millions, and lead to new developments of their slumbering powers.

SOIL.

It is not probable that the raising of flax can be so general and remunerative as wool. Soil and atmospheric influences have more effect upon flax than wool. A soil suited for corn, and in a good common condition for that crop, is suitable for flax. It should be well pulverized, and not weedy. It will bear more moisture in the air without injury than corn, and is not so sensitive to cold. Farmers in this section used to sow it early in May or else not till June. If the ground froze a trifle just as it was about to break thro', it did it no harm, and in that case it would not be injured by light frosts after it came up. But if there was no frost after it vegetated till it was about an inch high or so, a light one was sure to kill it then. Like many other crops, it will not grow repeatedly upon the same spot. It was always said to do better on land not previously sown to it, and newish land was usually preferred

This would indicate that it was an exhausting crop, and that it required several years to restore to the soil the elements drawn from it by a crop of flax.

The seed used to be quite an item in the profits of the crop, although the fiber was said not to be so good when it stood till the seed was perfected. No one thought, however, of pulling it before.

CULTIVATION, HARVESTING AND CLEANING.

It is nearly forty years since the writer had any experience in flax raising, and its subsequent preparation for the wheel at home, or the market. Let me recall the process:

Ground that had been planted the previous year selected, plowed and cross-plowed, and harrowed till the seed bed was very even and fine.—One-half bushel of seed was sown on forty square rods of ground, equal to two bushels per acre.—It was well harrowed in, and then "bushed" over to make the surface as smooth as possible. If the weeds did not trouble, nothing more was done till a majority of the seed-bowls were turned slightly brown. Then came the back-aching process of "pulling flax," somewhat along in August. Men, boys, women and girls, if they could be persuaded, went at it. The hand grasped just below the seed-bowls what it could readily gather, and with an outward jerk, started the root just out of the soil. It was then seized by the other hand and held while another handful was gathered and started in the same way. When the (usually left hand) had all it could readily hold, a few straws were twisted or tied round it for a band, and the little bundle was thrown down to dry, or set upright in squads of twenty or thirty bundles. This process was always trying to both back and hands, especially "soft" hands. When partially dry it was carried to the barn and set upright to more perfectly cure the seed. The next process was to thresh off the seed. It was then carried to some smooth plat of ground, usually mowed land, and spread for "rotting."—And here there was a still more severe back-tax. It was thinly and evenly spread in rows upon the stubble of the mowland, usually the last of August or before the middle of September. In this condition it lay some four to six weeks, under the trial of dew, rain, and sun, by the combined influence of which the wood of the stem became brittle and easily separated from the fiber. When by trial it was found to be sufficiently "rotted" it was raked up into large bundles, and when dry carried to the barn or shed for storage. Here it usually remained till the cold, drying winds of the next March. Then came the process of "getting out the flax." This was cold, dusty work, and a suit of old clothes were resorted to. Of the

tools first in order was the "break," a kind of indescribable horse in two parts,—the action of which was much as if you should lay some straws upon the extended and spread fingers of one hand and then with the other fingers press the straws down through the openings. The slats of the "break" interlocked in a similar manner, and the flax being between, the wood or the stem was broken into shives and partially separated from the fiber. Even at this distant day I can seem to hear distinctly the *slam, slam, bang, slam* of the old break.

Next in order was the "swinging." This was to clean out the shives or stem part, and also to soften the fiber, much like the effect upon the ends of the thread or silk when a whip is snapped. A handful was taken in the left hand and held over the top of a perpendicular board five or six inches wide, made fast at the bottom to a block on the floor. With a "swinging-knife" in the right hand, a stroke was made downward upon the end of the flax hanging over the top of the board, and these blows repeated till that end of the flax was cleaned of the shives, when the other end received a similar whipping, and the whole was made soft and fine.

There was still another process before the flax was considered fully dressed for the foot-wheel, and that consisted in "hetcheling," or combing it with a steel-toothed hetchel, rendering the filaments still more fine and soft. The refuse combed out was termed tow, and was usually carded by hand and spun on a large wheel, by the "girls" in their first lessons on spinning, for filling or woof, while the combed portion was spread upon a distaff and spun into warp on the little or foot-wheel, by the more experienced and patient mothers or maiden aunts of the household. The cloth thus made was strong and very durable. But there is still a shrinking of the flesh at the very thought of putting such rough, coarse textures next the skin on a cold winter morning.—W. D. L., in *N. H. Journal of Agl.*

BARN YARDS.—As some inquiry has been made about a way to make dry barn yards, I will propose a plan, and would say that the yard must be raised with something, above the level of the ground around it, except it be planked, and in that case it must be slippery at times and soon rot out. It makes but little difference what the yard is raised with, except clay. If stone are most convenient, cover it one foot thick with them, taking care to pound up some of the top ones with a sledge hammer; then put on dirt or sand, (coal pit bottom is better,) and shape to your liking, and when you have used this yard two years, my word for it you will say it has not

cost too much. Do you say it cannot be raised unless the barn is raised; then raise the barn.—Put a screw under and you can raise one corner one foot high in five minutes. Every farmer should have one or more screws; they are handy for many things besides raising buildings, and they cost but little—\$2.50 at the foundry, and all the fitting they require is a piece of plank one foot square, with a hole in it for the collar.

FAILURE OF SEEDS.

Complaint is often made of the failure of seeds, and dishonestly imputed to the grower or vender, where the unfortunate result is attributable solely to the planter.

The germination of a seed in the soil, is one of the most beautiful and wonderful of all the operations of nature, and when contemplated with a scientific eye, will be found to be the result of a concurrence of causes, so intimately interdependent, and nicely balanced, that failure, even where the vital principle is unimpaired and perfect, can scarcely excite surprise. As a result, it may be considered as produced by the combined agency of earth, air, moisture and heat, and in order that the development may be successful, it is indispensable that these elements be duly combined and adjusted in accordance with the specific habits and wants of different kinds of seeds.

Hence it is that culturists frequently encounter no small difficulty in causing some kinds to germinate; and hence, too, the well founded doubts of the anxious husbandman or gardener respecting certain crops, till the appearance of the youthful plant allays his fears by the gratifying assurance that all is well. We offer a brief explanation of the causes occasioning the frequent loss of crops, as is supposed, from the non-germination of the seed. In order to exonerate seedsmen and producers from the unjust imputations of those to whom want of skill and information in sowing is apt to suggest the supposition that they have been imposed on, we submit the following remarks.

In order that a seed may germinate healthily, it must, in the first place be exposed to the unrestricted and free operations, conjointly exerted, of the three elements, viz.: *moisture, atmospheric air and heat*. It is also essential that light should be excluded until such time as the nutritive matters contained in the seed, shall have been exhausted, or the root, by having obtained a permanent fixture and position in the soil, is prepared to derive its sustenance from that medium.

In the first place, immediately upon being placed in the soil and covered, the seed experiences a modification of its physical properties; its starch is transformed into sugar, or pultaceous

matter, which is the appropriate nourishment of the nascent plant. If at this stage of its development, the surrounding soil should be suddenly deprived of its moisture, the plant would inevitably be destroyed. But with a full supply of moisture, the contents of the seed will continue to swell, until, by degrees, the formation of the future root being completed, the point penetrates the integument, or shell, enveloping the seed lobes, in a downward direction, while about the same time the plumule, or that part, which becomes the stem, is evolved, and progressively makes its way upwards to the air, which, with the elements of heat and moisture, are no less essential to its existence, than to the development or germination of the seed.

When seeds are planted or sowed, they frequently experience the incipient fermentation, or normal change preparatory to germination, and the earth not being sufficiently consolidated around them, they perish from lack of moisture; or it may be from a too copious supply of moisture, where the ground is humid and unduly retentive around them.

Seeds are sometimes buried too deep, and thus perish from lack of warmth and air. When seeds are of small size, great care should be exercised in the preparation of the soil for their reception. It should be very fine, in which state it will admit of the degree of compression necessary to bring it in contact with every part of the seed, and yet not be sufficiently consolidated to impair its vegetative powers, even in case of drought.

In putting in crops, the careful farmer will consult both the state of the weather and the condition of the soil, and regulate his conduct accordingly. If the surface be dry, and the indications are of clear and dry weather, he will consider an extra amount of covering necessary, for no seed will germinate in a dry soil, and that which is moist and in a condition to retain an adequate supply, exists, at such time only at a considerable depth. But if the weather be cold and the soil wet, he will see the necessity of depositing his seed nearer the surface; it will then be more directly exposed to the vivifying influences of the sun, and be less liable to be smothered by excess of moisture, when the soil is saturated with wet.

Many seeds are so small and the pericarp enclosing the seed lobes so excessively hard, that they generally remain a long time in the soil before germination commences, unless extra care is bestowed in sowing them. By compressing the soil closely around them, this tenderness of development is to a certain extent overcome. But it is more judicious, before committing such seeds, to the soil, to prepare them by a temporary i

mersion in some steep, which will soften the integument, and prepare them for a healthy, and more rapid start.—*N. Eng. Farmer.*

Mineral Wealth of Arizona.

A number of the 1st California Cavalry writing from Arizona Territory, to the Grand Rapids Eagle, says:

"You have, by this time, been informed by the Pacific exchanges, of the recent immense gold discoveries made near the Gila river, which, in point of richness, will shortly rival the halcyon days of California, or Australia, and ultimately assist our national financiers in paying off the war debt. I have seen the gold in quantities sufficient to silence any skeptical scruples which I might entertain about endorsing the recent reports.—There is gold here in apparently inexhaustible quantities.

This discovery is the death-warrant to the Apache. It has long been known to frontiersmen, that Arizona was rich in minerals; yet the savages which infest the mountain ranges of this country, were far too numerous and troublesome to permit small parties to "prospect" for indications, and large parties lacked faith to venture.—These Indians are brave, hardy and abstemious—living entirely by the chase and the plundering of emigrant trains. From the peculiar topography of the country, they can watch the progress of trains for miles along the dusty road over this desert region, and, selecting the most favorable opportunity and position, swoop down upon them, capturing what they want and destroying all else, and then fly to the mountains to enjoy their booty, and mediate fresh robberies. But the California soldiers have been giving them some pretty severe lessons in endurance, perseverance, and, I must add, blood-thirstiness.

Some twenty-five miles northwest of our present camp, there are a few log cabins, now deserted, which were formerly occupied by some four or five hundred Sonorian miners, who, in the usual rudely primitive Mexican fashion, managed to extract gold in sufficient quantities to keep them alive. Some are reported to have made several fortunes here; but, latterly, the Indians have become so troublesome as to have depopulated the place, and the mine is abandoned. About ten miles due East from the deserted mining town, is the ancient copper mine of Santa Rita, from which great quantities of ore was formerly taken and sent to Mexico.

It was the site of a town, formerly containing 2,400 inhabitants. No sound now broke the silence which hung around the spot, formerly alive, where night was made musical by the tinkle of the guitar and the cadenced patter of the little

feet of joyous *Senoritas*, in the fandango which usually followed the day's labor. Five miles west of our present camp is one of the greatest objects of interest to be found in this country. It is the warm spring, or *Ojo Caliente*. It is a basin of almost boiling water, formed in the cone of a small hill, situated on a vast plain. It is evidently the crater of a now slumbering volcano. Upon the rugged rim one can sit for hours, watching the gas bubbles rising to the surface of the black chasm and bursting. A few years ago some pioneers established a bath house and saloon here, which was patronized by the citizens of another little settlement, situated about half a mile north of our present camp, (Mowrie city), and which boasted of a newspaper for public men—a few such pureminded patriots as Ned McGowen and Phil F. Herbert, etc., with more insignificant citizens to the number of twelve or fifteen hundred. But the Apaches massacred almost every one here and drove them off. The recent discoveries of minerals and the attention which it will attract from the hardy pioneer of the Mississippi Valley, together with a flood of California fortune seekers, will once more reclaim this region to civilization; and where the Anglo Saxon establishes himself—unlike the Mexican—he stays for good."

T. B. PETERSON & BRO'S., Philadelphia, have issued the following new publications, which have been laid upon our table. "The Rejected Wife," by Mrs. Ann S. Stephens, is one of the best stories of the day—in pathos it is equal to "Uncle Tom's Cabin,"—its plot is founded upon inferred incidents from the life of Arnold, the traitor. "True as Steel," by the same authoress, and the "Fatal Marriage," by Mrs. Emma D. E. N. Southworth, her scenes are life pictures founded upon fact, and her sentiments contain a great purity, in both conception and style. All of the above books are intensely American in their incidents and characters. "The Lost Bank Note," and the "Shadow of Ashleydyat" abounding with gems of English life scenes—"The Gold Seekers" and "Tiger Slayer," by Gustave Aimard, are also issued by the same extensive publishers. For sale by J. A. Roys, near the Detroit Post Office, together with "Harper's Magazine," "Beadles Dime Tales," and all other popular works of the day.

THE PRESIDENT'S SICK-BED JOKE.—While the President was lying in his bed, week before last, sick with the small-pox, the usher entered with something less than a bushel of cards from eager office seekers from all over the country, anxious for an audience. The physician said to the usher, "Do not admit a man—not a man. The President must not be disturbed." Old Abe rolled over, chuckling feebly, and remarked dryly—"Let 'em come, let 'em come; I've got something, at last, to give every one of 'em."

HORTICULTURE.

A Discovery in Grape Culture.

In a discussion upon the merits of the grape by the members of the Illinois State Horticultural Society, at its last meeting, a remarkable statement of facts has been received from one of the members of that society since the date of that meeting. He states that he understands well the character of the Delaware grape. He has vines that bear abundantly, and others that do not bear at all. He has Delaware vines that have always been strong growers, and others that had only a feeble, sickly existence. He had been puzzled as to the cause of this difference; but experiments and observation had satisfied him that he had discovered the cause. He says if the Delaware is propagated by cuttings from bearing wood, it will grow strong and fruit early and abundantly, invariably. If propagated from barren wood, it will make a feeble growth and never fruit. The writer asserts that this man is a skillful and successful horticulturist, and that his assertion will command the confidence of all who know him.

On further inquiry this statement is confirmed by others, and among the number Dr. J. A. Kennicott, of Chicago. He states that he has two-year old vines loaded with fruit. He asserts that he knows that they were propagated from bearing wood by Charles Downing, Esq. He has other vines propagated from bearing wood obtained from his father, the late Doctor Kennicott, which are also giving fruit and growing strongly. But vines which he has himself propagated from barren wood yield no fruit, and sustain the sickly and weakly character so often given to the Delaware vine.

This is certainly a very important discovery, should these assertions prove true, which, with such testimony, can hardly be doubted. Nor is it probable that this peculiarity is confined to the Delaware variety alone, but, on trial, other varieties would likely present the same characteristics. The great demand for Delaware vines has led to the employment of everything that would produce one, and this may in some instances explain the cause of the complaints we so often hear from certain cultivators in regard to its weak growth and want of productiveness. Two or three years ago I heard of one extensive vine-grower near Cincinnati, who had compared the growth of the vines propagated by Dr. Grant with some propagated by others, and found the difference so great [no doubt without understanding fully the cause] that he was induced to sell all others, and purchased vines to a large amount of Dr. Grant. It

is well known that Dr. Grant is a careful and scientific propagator. His plants are grown from good wood, and are always well ripened. It would be interesting to receive the views of Dr. Grant upon the statement of the Illinois cultivators.

The above facts go a great ways in explaining why there is so much difference in both vines and opinions, in regard to grapes of the same variety, when cultivated in similar soil and latitudes.

SHELTER AND PROTECTION OF ORCHARDS.

From Department of Agriculture Report for 1882.

Among the many subjects of interest to the fruit-grower there are none that so imperatively demand his attention as those of shelter and protection to his crops; certainly there are none that present a greater prospect of increased remuneration in the products of the orchard and garden.

It cannot have escaped the notice of those who are familiar with foreign works on horticulture, that their principal gardens and fruit grounds are surrounded by walls or hedges, showing that protection is deemed essential, or absolutely necessary to secure the best products by rendering the climate more congenial, and approaching more nearly the atmospheric conditions of warmer latitudes.

Allowing that the American climate, at least over the greater portion of the continent, is particularly favorable to the production of fruits, we cannot shut our eyes to the fact that in sheltered city gardens, vegetation commences at an earlier period, and, as a consequence, fruits ripen earlier, and in many instances attain a greater degree of perfection, and are less liable to casualties and diseases, than those in more open exposures; and those of a somewhat tender nature, as the fig and exotic grape, will flourish and fruit when thus protected, while in contiguous open localities they would be killed to the root every winter.

It has become a standard remark of late that many of our best fruit trees are more liable to disease, and their products more generally inferior, both as to quantity and quality, than they formerly were. Admitting as a fact that much of this inferiority is owing to the increased age of orchards, as well as negligent culture, it cannot be denied that, even with improved knowledge in culture, many fruits are not produced in such perfection as formerly, under what would now be very properly termed unskilled labor.

Throughout most of the older cultivated regions of our country it is now of rare occurrence to find an orchard producing fruit not more or less imperfect. Apples are disfigured by warty and scab-like blotches, and pears are cracked and

w-rthless. Blights, so called, are also more frequently met, and their origin as little understood as it was fifty years ago. We are fully aware of the prevailing tendency of some to applaud the past and decry the present. We can, also, give full allowance for the sympathetic associations of youthful times, when all seemed fair to our eyes, and when "stolen waters were sweet, and bread eaten in secret pleasant," and quarrel not with those who cannot see in our Bartlett's and Belle Lucratives any such excellence as characterized the early Catharines of boyhood. Making due allowance for all this, we are still convinced that both diseases and destructive insects are on the increase, and that the time has arrived in all its fullness when cultivators must possess themselves of all attainable knowledge relative to the principles of vegetable growth, and endeavor to deduce from such knowledge a course of practice applicable to their locality and the various crops they cultivate.

When agricultural chemists first proposed to instruct us, and point the more practical operator to the proper mode of culture, high promises of valuable aid were given, and cultivators were induced to place confidence in the promises so lavishly bestowed. The conviction is, however, gradually becoming more settled that these promises are not fulfilled. This was not unforeseen by intelligent, practical operators, as it was evident that the multifarious agents of vegetation, and their still further ramified combinations, could not be confined to the laboratory of the chemist; more particularly would the physical agents, air, light, heat, and moisture, be excluded from his investigations; or, at most, be but casually considered in his analytical labors. For example, in the analysis of a soil the chemist can very accurately determine the kind and amount of its ingredients, but he cannot so readily explain the exact specific relation that exists between these raw ingredients and their preparation as food for plants. He can bring to his aid the energetic and active properties of fire, acids, and alkalies, and is thus enabled to separate and value the substances of which the soil is composed; but this knowledge alone will not justify him in pronouncing upon the adaptability of that soil to produce a crop, for it has been repeatedly shown that a soil may possess an abundance of the substances required by a crop, and yet be unproductive, for the reason that these elementary substances, although present, may not be in a sufficiently soluble condition to be available for the purpose of vegetation.

The constituent parts of a plant may, also, be very accurately determined; but how they are obtained, eliminated, held together, and assimilat-

ed by the plant, is another branch of study, as it is also the most important. Those who form theories and base their deductions upon investigations confined to the simple changes of dead matter will find so many opposing influences when life is concerned, as will compel them to a further study more intimately connected with vegetable physiology, and the important part that organic agencies exercise in the growth of plants, and the physical condition rather than the chemical constitution of the soil upon which they grow.

In the culture of plants the great aim should undoubtedly be to properly balance the agencies of growth; this is the great art of culture. Aware of the unlimited ramifications of this subject, it is not proposed to enter upon it at present, further than slightly glance at the importance of shelter as an auxiliary towards securing a desirable equilibrium of some of these agencies.

In brief, it may be stated that the necessities of shelter are two-fold—to guard against excessive aridity during summer and severe cold during winter. In other words, to modify the debilitating effects of the injurious evaporation produced by the extremes of heat and cold.

The debilitating effect upon vegetation of continued aridity during summer is well known, and various expedients are resorted to, in order to ameliorate its influence, and it is found that one of the most effective, and at the same time most available means of checking evaporation is by arresting the currents by shelters of vegetation. Our natural forests are rapidly being destroyed, and it is admitted that the destruction of forests tends to lessen the moisture both of the atmosphere and the soil. The disappearance of the streams in the mountains of Greece, and the sultry atmosphere and droughts of Cape de Verd islands, have been attributed to the destruction of forests. In densely wooded countries, where, in connexion with excessive rains, the climate is rendered unhealthy, clearing the lands of vegetation has been the means of vast improvement as we are told has been experienced at Rio de Janeiro. Hence it is reasonable to suppose that by planting belts and groups, in masses, of hardy, suitable trees, in the vicinity of orchards and gardens, the dry currents will be arrested, and injurious exhalations from the crops measurably prevented; and, further, it may be found that atmospheric moisture will be increased by the proximity of such masses of trees from the results of condensation on their surface. That exhalation is much diminished when the drying current is arrested, and increased with the rapidity of the arid breeze, is well known, and the formula has been given that the same surface which, in a calm state of the air, would exhale one hundred parts

of moisture, would yield one hundred and twenty-five in moderate breeze, and one hundred and fifty in a high wind; the beneficial effects of arresting or diminishing the force of currents is, therefore, very evident.

So little are we acquainted with the diseases of plants, that no intelligent classification of them has been attempted. The terms *mildew* and *blight* are used in a general sense to indicate the results of disorganization; but the causes that produce these results are not so readily distinguished.

Mildew, in some one or other of its forms, has become of the greatest evils connected with fruit culture. The mildew on the native and foreign grape, on the gooseberry, the cracking and scabbing of the pear and the apple, are well known causes of perplexity to cultivators; and, although the formation and increase of mildew is not particularly well understood, and while it is, perhaps, premature to advance the opinion that it is wholly the result of atmospheric disturbances, and capable of being prevented by suitable shelters, there is accumulating evidence showing that position and exposure are closely connected with its appearance and exemption.

For the successful adornment of lawns and pleasure grounds, shelter is of the first importance.—One of the greatest obstacles to the growth of choice evergreen trees and shrubs, especially during the earlier stages of growth, is the aridity of our summers. Broad-leaved evergreens, as the Mahonia, the Rhododendron, and others of similar character, must be sheltered and protected if they are expected to grow into objects of beauty or interest. In their native habitat these plants are protected by superior vegetation, and surrounded with an atmosphere more uniformly charged with moisture than they usually are in artificial plantations.

Protection during winter is not less an object of utility. The degree of cold that plants will resist uninjured is a question that cannot be definitely answered; a plant will occasionally be destroyed by a degree of cold that it previously encountered without apparent injury. We are not to suppose, in cases of this kind, that they proceed from changes in the laws of nature, but rather that the resisting power, by some means or other, has been reduced, or, what is more probable, that the mere thermometric degree of cold is not the main cause of injury.

Future investigations may determine that many of the diseases of plants originate from the effects of cold and its accompaniments during winter.—There is no reason why fatal influences may not linger in vegetable as well as in animal organism, and our experience and observation has led to the conviction that such instances are by no means rare.

According to the theories of De Candolle, the power of plants to resist extremes of temperature is—

1. In the inverse ratio of the quantity of water which they contain.
2. In proportion to the viscosity of their fluids.
3. In the inverse ratio of the rapidity with which their fluids circulate.
4. In proportion to the size of the cells so is the liability of plants to freeze.
5. The power of plants to resist the extremes of temperature is in exact proportion to the amount of confined air which the structure of the plants themselves enables them to contain.

Whatever degree of truth these theories may contain, there is not much calculated to materially assist the ordinary cultivator. He cannot ascertain the dimensions of the cells, neither can he measure the quantity, nor decide upon the quality of their fluids: external appearances will not contribute to his aid, for, while the oak and the orange are undeniably of solid texture, the one is hardy and the other is not; the wood of the fig is similar in texture to that of the willow; but while the first is susceptible of injury from slight frost, the willow will stand unharmed through our most severe winters.

The exact process by which cold destroys plants is a matter on which there is room for much conjecture. The mechanical action due to the expansion of fluids while freezing, in lacerating and disrupting their tissue and thereby destroying the connexion of the sap vessels, has been deemed a sufficient explanation. We cannot, however, consider it a conclusive reason for all the phenomena observed when plants are frozen. The disruption of tissue and fluid cells is a probable and reasonable cause of decay, and no doubt deaths are produced from this cause; but, as has already been remarked, plants may at times be subjected to a severity of cold that solidifies the sap, and yet remain perfect and healthy, while they will succumb to comparatively slight cold, if long continued and accompanied by rapidity in the currents of air.

When green house or other tender plants are accidentally frozen, they may be resuscitated by carefully shading them from the sun, sprinkling them with water, and surrounding them with a moist atmosphere, continuing these conditions until the temperature is increased to a safe point. We have repeatedly tried the experiment of removing a plant thus frozen into a house, where it was placed under the influence of a dry heat and exposed to the sun while in the frozen state, and the experiment proved fatal to the plant. This mode of treating green-house plants, when accidentally exposed to a few degrees of frost, is a common and successful expedient. We have seen eight degrees of frost suddenly obtain in a green house containing a varied collection of plants, many of them of a very tender nature, and so completely frozen that many of the branches and succulent shoots were rendered as brittle and broke as easily as a delicate rod of glass; yet by prompt and effectual shading, and increasing the moisture and temperature slowly, very few were injured. It is difficult to conceive how plants so circumstanced could escape destruction if their tissue is disrupted when the sap which they contain is converted into ice, since no after treatment could then save them, as no press, either slow or rapid, could reconstruct the tissue.

Whatever may be the injury from disruption, we are convinced that extreme cold and extreme heat act in a similar manner upon plants, and that exhaustive evaporation is equally injurious, whether produced by one or other of these extremes; and although physiologists have not been able to give any well defined explanation why one plant is harder than another, further than that its constitution is adapted to its natural climate, it is well known that plants are rendered more capable of resisting extremes when their wood has attained

its greatest degree of maturity. This also coincides with the opinion of De Candolle; his first, second, and third axioms prove that plants resist frost in proportion to the solidity of their wood.

Perfect maturity of growth is the great object of all cultivation; this fact should always be uppermost in the mind of the fruit grower. Too much importance cannot be placed on the fundamental principle, in fruit culture, that whatever tends to render tissue moist, increases its susceptibility to injury from cold, and whatever tends to reduce humidity, and hasten the conversion of fluid-matter into woody fibre, increases its power of resisting cold; but this is not the only result of thorough maturity, for without it there can be no fruit. The failures in fruit-culture arising from excessive luxuriance, and stimulated growths that never mature, are beyond calculation. The production of mere wood growth and the production of fruit are antagonistic processes; and until this fact is recognized and acted upon the highest excellence of culture will not be attained.

With regard to the hardihood of plants and the necessities of protection, there are individuals who maintain that a fruit tree or plant to be valuable, or fitted for general culture, must be able to take care of itself. This cannot be looked upon in any other light than as a lame excuse for indolence and neglect. It is the province of man to assist nature in producing such results as he finds most desirable for his purposes; and if he removes plants from their natural conditions, and then leaves them to take care of themselves, he must expect to realize the usual consequences of neglect.

The object of these remarks may be rendered more apparent by a brief enumeration of some of the more important advantages which may be expected from partial shelter and protection, and through them the exemption from, or modification of diseases of various kinds on some of the most valuable fruit trees and plants.

The Apple.

The cracking of the apple and the blotches and scarifications frequently observed on its surface have been referred to the attack of fungoid growths or mildew. Various examples have been cited where orchards, sheltered from prevailing winds, have shown a decided exemption from these attacks. In opposition to this supposed cause of immunity it has been asked, Are our orchards more exposed now than they formerly were? As a general rule, we think it quite likely that they are, seeing that in all sections as cultivation increases the forests are gradually thinned and cleared. The effects of destroying the forests of a country have already been noted; and we have a partial recognition of the importance of shelter in precept of many intelligent orchardists who advocate the planting of fruit trees much closer than has formerly been the rule, and also in the practice of encouraging the trees to branch quite to the surface, instead of training to a clear stem five or six feet from the roots. Both these expedients have a tendency to prevent rapid circulation of air through the orchard, and consequently are so far a preventive against evaporation from the soil as well as from the surfaces of the trees. Examples are not yet sufficiently numerous to warrant a decided opinion; but so far as they have been noted, the prospect of greater immunity by this mode of treatment is encouraging.

The Pear.

The cracking of this fruit has given rise to much speculation, and various theories have been advanced with reference to the cause. For a long period the opinion prevailed that it was owing to a deficiency of certain mineral ingredients in the soil, and various remedies based on this assumption were freely dispensed and tried, but with indifferent success. It is not now doubted that it is the result of mildew, and that the atmosphere, and not the soil, is at fault. In support of the opinion that it is governed by atmospheric influences, the fact may be quoted that the White Doyenne, one of the finest pears when perfect, rarely succeeds in exposed localities; yet, when grown in positions thoroughly protected, it is still produced in all its pristine beauty and excellence. Referring to cases with which we are familiar, we have seen annual exhibitions of this fruit grown in the built-up portions of the cities of Philadelphia and

cured to me that it was induced from evaporation at a time when the plants were unable to absorb by the roots. When the Soil is frozen to a depth of sixteen inches it is evident that all roots within that depth must also be frozen, and absorption and circulation be completely arrested. While the roots are in this state the branches are subject to the drying air of spring, and their juices are exhausted by evaporation; the supply of moisture by the roots being inert, the plant has no more power of supporting life than it would have supposing it to be cut over at the surface and thrown on the ground. These conditions, long continued, must result in injury; and if not immediately destructive, disease is engendered, to be intensified by the first untoward influence.

It is not to be supposed that this is the sole cause of blight, but I am convinced that it is a frequent one, and more prevalent on what are termed dwarf pears, the roots of which being quince, do not reach so deep as the pear roots, but rather ramify and spread nearer the surface, and therefore are more likely to be included in the frozen strata. Supposing that this was a source of blight, I adopted the practice of covering over the roots in early winter with charcoal dust, a few inches in depth of which will entirely prevent the penetration of frost. Since this precaution has been adopted, I have not observed even a blighted limb or leaf. I think it cannot be shown that the roots of plants are in any degree benefited by being frozen, and, it can certainly be shown that they are oftentimes injured by it. Therefore it is a safe rule to protect the roots so that their absorbing powers may constantly be ready for action.

It may be well to note, in connexion with this subject, that crops, both of apples and pears, are sometimes lost by late frosts when they are in bloom. It is an old custom, but now much neglected, to have ready, in various suitable localities, around an orchard, several heaps of dried weeds or rubbish of such description; then should a slight frost occur when the trees are in bloom, set fire to these heaps and endeavor to create as much smoke as possible. Crops have repeatedly been saved by this precaution. It is obvious that these smoking heaps should be placed on the windy side.

The Peach.

The curl, or leaf blister of the peach, although seldom fatal in its effects, checks the growth and diminishes the crop. From the circumstance that these blistered leaves form a famous asylum for the aphids, these pests of vegetation are generally found lurking in the blistered recesses which has given currency to the opinion that they are the sole cause of the Baltimore, most perfect of its kind, without spot or blemish, when those from trees growing in the more exposed suburbs invariably proved defective. Again, it has been lately shown that, fruited in the quiet atmosphere, of a fruit-house they attain great perfection; and further, we have seen a tree, one of a row that produced worthless fruit, enclosed on all sides by a small box, open at top and elevated a few inches above the soil, produce perfect fruit, while the productions of the adjoining trees were, as usual, cracked and worthless. Whatever may be allowed for protection in the above cases, it is very evident that they were not influenced by the nature of the soil.

The origin of the blight on the pear tree has also been a fruitful source of conjecture. No doubt the term is applied to effects produced from various causes. We will state our observations on one species of this malady or disease. Those who have pear orchards will, perhaps, recall instances where the trees, or portions of them, have suddenly ceased to grow shortly after budding in spring. The young leaves and growths present a blackened appearance and rapidly wither. On examination, the bark will present a shrivelled appearance, and on cutting into the wood it is found discolored and apparently in a state of decomposition. In some instances a solitary limb, but more usually one side of the tree, will be more particularly affected. By cutting down until all discolored wood is removed, the plant will recover; but if neglected, the entire plant will be destroyed. Having lost many trees in this manner, and observing that it was most prevalent after severe winters, especially if the ground was frozen fourteen or sixteen inches during February and the early portion of March, it oc-

evil. This, however, is not the case, as is evident from the fact that they are not always present on blistered leaves. It is entirely atmospheric, and may be looked for after sudden extreme fluctuations of temperature. Referring to my notes, I find that a change of 80° in 48 hours invariably produced it, but trees sheltered from the prevailing wind were mostly exempt. A notable instance is recorded in my journal of 1860. The thermometer fell 40° in 24 hours, with a cold northeast wind. Previous to this the peach trees in a small orchard planted on the east side of a close board fence were in perfect health; in less than one week afterward the leaves were so severely blistered, and the sheltering influence of the fence was peculiarly prominent.

The Grape.

It is well understood by intelligent grape-growers that atmospheric changes are the great cause of mildew on that fruit. Notwithstanding that opposite opinions are persistently promulgated. We have taken the trouble to investigate some of these pretended immunities, and have been astonished at the perfect ignorance displayed with reference even to the appearance of mildew. We have visited a vineyard where the plants were almost totally denuded of their foliage from its effects, yet the proprietor was publicly announcing his system of culture as one that insured entire exemption from mildew and other diseases. We allude to this here for the purpose of showing that opinions can only be valuable when given by an experienced observer.

The following extract from a late work will show the necessity and effects of sheltering vineyards:

"The fact that grape vines growing in sheltered positions, such as under the eaves of buildings and under the shelter of trees, are generally found exempt from this species of mildew, points us to the most available remedy; and the common occurrence of vines growing in trees, where they are sheltered by overhanging foliage, retaining their health, while branches from the same roots trained on an exposed trellis near by will be severely attacked by mildew, is very strong evidence that the cause is mainly atmospheric.

"Tracing the cause of mildew to this source, it becomes a matter of inquiry how far we can employ expedients that will either prevent or modify its effects. Undoubtedly shelter of some kind from sudden changes and atmospheric currents is one of the most prominent, and every experienced grape-grower can recall instances where even a seemingly slight protection proved of great value."

The Strawberry.

Most of our cultivated varieties of the strawberry will, on ordinarily well drained soils, endure without winter protection. But it is a ruinous mistake to suppose that they are not benefited by it. The statement can be proved that, on an average of seasons, plants properly protected will produce one-third more fruit than those left exposed. The crop will also ripen earlier; the opinion of those who have the most experience, and who are most successful and cultivate with most profit, is uniformly in favor of winter protection. Shelter from the effects of wintry winds prevents exhaustion, for although the strawberry is a lowly plant, it is greatly affected by the rude breezes so frequently characteristic of our spring weather.

The Raspberry.

To procure a perfectly hardy raspberry has long been one of the greatest efforts of fruit-growers. Perhaps we already possess as hardy a race as we can expect. To have fruit of the best quality it is necessary to enrich the soil, and this stimulus tends to a luxuriant growth of cane which will not invariably attain that thorough rigidity of maturity necessary to withstand the winter and spring winds. But the finest varieties need not be excluded simply because they require protection. A crop may always be insured by bending down the canes and covering them lightly with soil. In tolerably sheltered grounds good crops are secured without such precautions, and it has long been observed that those growing on the south or east side of a fence are most uniformly productive.

No better mode mode of protecting roses, grapes, raspberries, &c., during winter, has ever been practiced than that of simply bending down the shoots and covering them with soil. Even

when so as to be in close contact with the damp soil, without any covering, the benefit is very decided. They are thus not only placed below the rapid drying currents, but are enabled to absorb moisture by their surfaces to counteract evaporation.

As it might appear from the tenor of these remarks that an undue importance has been given to the destructive agencies of mildew, we append the following preliminary to a critical notice on fungi:

"Ignorant persons may wonder what interest can attach to such productions as fungi; they imagine them to be merely what are called toad stools; or, if they look a little further, their vision rests on a mushroom or a morel. When you talk of truffles, then, indeed, the lovers of good eating, many of whom never before heard that a truffle was a fungus, prick up their ears and begin to think there may be something in the study, but there they stop. Little dream they how large a part these productions perform in the economy of nature. Could they only understand the many forms and properties attaching to such plants they would cease to regard them with contempt. That many are eatable and many poisonous is known to all men. What is not so well known, is that they are among the most deadly and insidious enemies of mankind. What devastated Ireland and led to the regeneration of that country but the potato fungus? What has ruined the vineyards of all the west of Europe and Africa but the vine fungus? What carries destruction into the galleries of silk-growers but the caterpillar fungus? What seizes upon poor human nature in its greatest extremity but fever fungi? Our corn shrivels in the ear, its enemy is the corn fungus. The grain that should ripen into nutritious food becomes a deadly poison; the ergot fungus brings on that mischief. Our living trees turn pale and perish standing; root fungi are their enemy. Our bottles, which once contained a generous beverage, gradually are the receptacles of a filamentous mucilage, and wines become a stale, spiritless fluid; the mother fungi are there. Infants, indeed, is the evil they produce, and yet we owe our daily bread to their action; for the substance called yeast, to which belongs the singular property of setting up fermentation, is itself no more than a vast assemblage of living fungi, too minute to be seen by the naked eye. What a field there is here for observation and reflection! What friends to encourage and enemies to destroy! What food to collect and what waste of food to avert!"

To provide the necessary shelter, recourse must be had to artificial plantations of hardy trees, and of these evergreens will form the most effectual protection, and should mainly be depended upon. Of all evergreens, the Norway fir will prove most serviceable, and a single row of them planted six feet apart will, in a few years, form a sheltering wall of dense foliage. This tree naturally grows very symmetrical; but if any of the side branches outgrow their neighbors, they should be trimmed in to a proper distance. The lowest branches should always be widest. A little timely care will always insure this.

When large areas or open level plains, as on the western prairies, a single row should not be deemed sufficient. Belts not less than forty feet in breadth should be planted. The most effective points to plant are those from west round by north to east. A variety of trees may be used in these belts. The white pine is a fast growing tree, and can be kept thick and compact by cutting the points of those shoots that tend to over luxuriance. The Austrian pine is a tree of dense, robust habit, very hardy, and, like the Scotch pine, will adapt itself to any dry soil of good depth. The balsam fir will thrive better in lowlands than any other evergreen, and, although it may not be the most ornamental of trees, it is well fitted for massive planting. The hemlock spruce, most beautiful of all evergreens, should not be overlooked. It will thrive well as undergrowth, and from a graceful boundary fringe to thickets.

In vineyards and pear orchards, more particularly the former, great advantage would be derived from secondary hedges running in parallel lines, say two hundred feet apart. These may be formed of the American arbutus, our best evergreen hedge plant. In pear and other orchards, Norway fir may be used for a like purpose.

To secure an effectual shelter the plants must be thickly set; and even when the plantation is intended to be ultimately evergreen, a liberal mixture of rapidly-growing deciduous trees should be introduced. Fast-growing trees, as the silver maple, English alder, various willows, balsam, and cottonwood poplars, the European larch, and others, will be most suitable. The young ever-greens will be greatly benefited by the shade of the deciduous trees, but the latter should be pruned and gradually thinned as the evergreens increase, and removed altogether when the object of their introduction has been accomplished.

We close for the present these desultory remarks upon a subject that will, ere many years elapse, demand and receive popular attention. They might have been more specifically enlarged had the object in writing then, not been rather to draw the attention of fruit-growers to the diseases of plants than to impart particular advice relative to details.

FRUIT TREES—WINTER PROTECTION.

J. C. Plumb, of Lake Side Nurseries, Madison, Wis., in a correspondence to the 'Prairie Farmer,' gives the following useful and seasonable suggestions upon winter care of fruit trees, small fruits, and ornamental shrubbery:

"The severe experience of last winter has taught nurserymen a lesson not soon to be forgotten, in the winter protection which young stocks of all descriptions may require. The exceeding mild character of which enabled the really tender varieties of various fruits and shrubs to go through with their young wood quite uninjured, was on the whole productive of more injury than those of more severe seasons, which kill back the young and tender wood.

The cause may be found in the long spells of warm weather occurring in February and March, the ground being bare of snow, thawed down four to six inches, where unprotected by some sort of winter mulch.

The result of this open, mild winter, was seen in the destruction of the surface small roots, even of many of the hardiest fruits. For example, apple and pear seedlings of feeble growth were killed outright, as well as quince stocks, young dwarf pear, grapes of all the half hardy and tender varieties—roses, strawberries, &c.

The injury was not confined to the fibrous roots alone, but in many cases to the main and tap roots were severely injured down to the exact line of alternate freezing and starving.

The usual precaution of banking with earth did not avail much. Many a dwarf pear tree when spring opened, was in the condition of a newly set tree, without fibrous roots, grape layers in the condition of fresh layers, with all their new roots entirely killed out, but perfectly bright otherwise.

The remedy is obvious. When nature spreads the great white sheets of winter mulch over all the land, we are perfectly safe from the injuries mentioned, but the bright sun of late winter and early spring too often drive away this beneficent provision, to rely upon it entirely.

But further still, nature provides her forests and groves, blackberry patches and strawberry beds, with warm coatings of fallen leaves and withered grass, or the shadows of many twigs and branches, all tending to equalize the changeable temperature of our western winters. But we do not advise depending entirely upon the natural source of vegetation to clothe our gardens with grass and weedy rag carpets for winter protection, for if our fruit trees and plants are well cultivated through the season, we can certainly afford to preserve the life and health in them by imitating nature in suitable covering of the adjacent surface, and the materials suitable for this purpose are so various and abundant that there seems no excuse for neglecting the matter of winter protection.

The most universal material in the west is straw, or strawy manure, and better cannot be found, provided it is so used as not to prove a harbor for mice. Well cultivated fields are generally free from mice, but not so the grass plot or seeded orchard.

A farmer thought to compensate for grassing his orchard, by a heavy top-dressing of coarse manure piled under the drip of the trees in mid-winter. The consequence was a general girdling of the trees, a not uncommon occurrence, but always to be looked out for.

A very thin covering of coarse manure is sufficient to protect from the changes of the weather, and is safe in well cultivated fields, but only the fine manure or its equivalent should be used in weedy grassy grounds, where many mice harbor.

When the autumn banking or mounding up has been attended to there will be little or no risk in using coarse manure or straw, as mice work only under cover, and in all cases the mulch should be packed down smoothly.

But there are generally sufficient materials at hand just right for use anywhere, in the garden, front yard, lawn or orchard, which was perfectly safe, not unsightly, retain their place, and are just right in spring for a top-dressing.

Fine or rotten manure is generally most convenient, but not more valuable than peat, spent tan, leaves or sawdust; especially the latter where it can be obtained in quantity, is an excellent material for winter mulch, and can be piled around trees and plants with impunity if well-packed.

All this winter mulch should be hoed away and spread in spring, and will pay an hundred fold the cost in adding to the tree.

Strawberry beds should be covered by the first of January, if not before, with straw, or some description of litter. Branches of oak with the leaves on, are an excellent covering over a light straw litter; and taken together are about

the best material for strawberry beds in situations where much litter is objectionable, as in city gardens. The same can be used for climbing roses that are laid down, also grape, raspberry, blackberry, and other pliable plants that are laid down to winter.

Roses of all the fine sorts should be protected from the changes of the season by winter mulch and by strawing the tops; or any sort of matting well tied on; branches of evergreens, or even a newspaper wrapped around and well-tied, and prove all sufficient protection. Well bank small shrubs, and turn small plant pots over them.

A box barrel, keg, or even chicken coop turned over a rose bush may be often a welcome shield equal to the value of the shrub.

All half hardy varieties of apple, pear, cherry, &c., can be, in connection with the winter mulch fully protected by a slight covering of the bodies from all the vicissitudes of the weather common to this climate.

A single sheet of a paper, or a newspaper wrapped around the trunk and tied with a bit of cord, will protect from injury by the extremes of the winter as well as the gnawing of rabbits. Three or more cornstalks laid along the trunk, long enough to extend from the earth to the branches, confined with a cord, will answer the same purpose, always sure that the sunny side is shaded.

Hardly any subject connected with fruit growing is so little understood, as that of "winter-killing," and yet none more simple.

The secret lies in the fact that it is not in the extent or duration of cold to which hardy plants are exposed, but in the sudden transition from one extreme to another. One rapid change from heat to cold often being sufficient to crack the body of a tree from centre to circumference, and from crown to branch, or even to separate the bark from the wood entirely around the trunk.

Now simply protect from this sudden change, and the tree adapts itself to the extremes without injury. *Protect from the Sun*, and the temperature will be sufficiently equal to meet the general demands of the fruit-grower."

Grafts.

A correspondent of the *Germanstown Telegraph* says:—"It is not generally known that scions or grafts may be cut in the winter as well as spring. From the numerous inquiries of me relative to the subject, I will say for the benefit of the inexperienced, that scions may be taken off during the winter months with as good a chance of success as at any other season; and that if preserved in wet moss, or sand slightly moistened, and kept in a cool place in the cellar till wanted, they will remain uninjured, and may be set with confidence as to the result.—I have known scions cut in December and January, and packed in this way, transported hundreds of miles in an open vehicle, with the thermometer below zero, and when set they came forward as vigorously as scions cut the following spring. When deposited in cellars care should be taken that they are not kept either too dry or too moist. Either extreme, though it may not prove fatal, will greatly injure the vital energy of the system, and prevent the scions from putting forth with that degree of vigor they would otherwise exhibit."

—The entire net receipts of the Northwestern fair at Chicago will amount to about \$75,000.

MISCELLANEOUS.

Killing Hogs—How to Cut Up the Head.

A correspondent of the *Germanstown Telegraph*, gives the following instructions on the above subject:

"Killing hogs is a business in which the whole community is interested, and perhaps a small proportion acquainted with. It is termed 'butchering,' and often carried on in butchering style, while it is a business worthy of being conducted in a decent and scientific way. Do not suffer the hog to be run and worried by men, boys, and dogs, getting his blood and flesh heated, just before he is killed. I believe this is one cause of meat spoiling. Sometimes we drive a hog or two to a neighbor's, so as to 'kill together,' as it is termed, making use of the same force, same fire and other fixings; and we have known the hams and shoulders of hogs thus driven to come out a little *short* before the next summer was over.

Let the hog be killed with as little noise and worryment and excitement as possible. A *Jerseyman* has one man to go into the pen, select his first victim, and shoots him, or with a broad-faced hammer (like a shoemaker's hammer) knocks down the hog, when other men come immediately and stick, others dig out and go to scalding, and so on, with a large number of hogs.

I would not plunge a hog into hot water while there is a sign of life in him; *but when dead*, make an opening to the gambrel strings and hook in, hoist the hog and dip him head and shoulders into the scald; do not let him remain more than a second or two, test his hair 'sets'; hoist him and air him, and if needful, dip him again till done; then hook into the *lower jaw*, and scald the hinder parts. I like *slow* scalds the best, a less likely to 'set the hair.' While the hind parts are being scalded the face may be cleaned. Too little attention is generally given to cleaning the head, as also the feet, leaving them for the women to worry over by hours in some cold out-kitchen.—As soon as the hog is hung up, and washed off, let the head be taken off and set upon a barrel or block, and regularly shaved and cleaned.

I want to say how I cut up a head. I lay it on its side and take off the jaw (or lower jaw). I then saw down across the face, just above the eyes, but careful to run into the eye sockets, and on through, leaving the eyeballs with the snout end, so that there is no further trouble with gouging the eyes out of the face-plate; then without further separating the parts, starting between the ears; saw up-and-down wise, not caring to extend farther down towards the snout than to the mark across the face, but clean through at the other end. Now, having done with the ears for handles, I cut them off, then take out the brains for pickling—skin the snout, and take off the flesh for scrapple, and throw the nasal organs away. *Corn the faces.*

Destruction of Trees by Ice.

We find in the *Boston Journal*, the following:—"The slight snow storm which occurred in the region of Boston, on Thursday, the 17th ult., ended in a drizzling rain twenty miles west of the city. It commenced raining Thursday evening, continuing through the night and most of the following day, Friday, and froze as fast as it fell, to everything it touched. When the sun was unclouded for a short time on Saturday, the spectacle presented was truly magnificent. The late sylvan was suddenly transformed into a *silver* world. Everything was covered with glittering ice—fields, fences, shrubs and trees, and when the wind slightly moved the latter, the noise made one think of the clatter of ten thousand cavalry scabbards, or the rush of mighty waters. But the sight, gorgeous and pleasing as it was, was attended with the greatest destruction of trees by ice that has ever been known in the memory of a veteran agriculturist. Before noon, on Saturday, limbs, varying from one inch to ten inches in diameter, began to fall from the grand old elms in every direction. Sometimes the entire side of a splendid tree would go down, leaving the other whole; in others limbs would fall from different parts of the tree, while in many cases nearly every branch would be broken.

from the top, leaving nothing but silvered stubs pointing to the skies. In the afternoon some of the sidewalks and highways became so obstructed that men were sent out with axes to clear away the ruins—some of the branches being too heavy for two men to move out of the roads. Some dwelling-houses were injured by the falling masses—in one case twenty or thirty feet of the covering was rent away, slating torn off, and the house otherwise injured.

In some places the roadsides present a most interesting appearance. The white birches, all sparkling with their diamonds, are bent over on each side towards the road, their tops reaching into the carriage-way, while their pendulous branches hang on every side, forming the most grotesque arbors and arches imaginable. By the moonlight they remind one of the fairy tales of the East—of vast halls peopled with supernatural beings and glittering with ethereal lights. But the sudden crash the moanings in the forest, proclaim the fact that our old and splendid shade trees are rapidly coming to the ground.—Elms suffer most, having long and sweeping branches; Willows and locusts are also badly broken. Fruit trees are not yet much injured; but all are still covered with thick ice. On some of the maples, every little twig holds a ball of ice as large as a good sized walnut, and from the under side of the ball icicles of various lengths are suspended. A brisk wind, while the trees are in their present condition, would work widespread ruin among them all. A friend weighed a branch with the ice on, and found it fifteen pounds. On thawing off the ice the branch weighed less than two pounds.

Children's Feet.

Life-long discomfort, disease, and sudden death often come to children through the inattention, ignorance, or carelessness of the parents. A child should never be allowed to go to sleep with cold feet; the thing to be last attended to, in putting a child to bed, should be to see that the feet are dry and warm. Neglect of this has often resulted in a dangerous attack of croup, diphtheria, or fatal sore throat.

Always, on coming from school, on entering the house from a visit or errand in rainy, muddy, or thawing weather, the child's shoes should be removed, and the mother should herself ascertain if the stockings are the least damp; and if so, should require them to be taken off, the feet held before the fire and rubbed with the hand until perfectly dry, and another pair of stockings be put on and another pair of shoes, while the other stockings and shoes should be placed where they can be well dried, so as to be ready for future use at a moment's notice.

There are children not ten years of age suffering with corns from too close fitting shoes, by the parent having been tempted to "take" them because a few cents were deducted from the price, while the child's foot is constantly growing. A shoe large enough with thin stockings is too small on the approach of cold weather and thicker hose, but the consideration that they are only half worn is sufficient sometimes to require them to be worn, with the result of a corn, which is to be more or less of a trouble for fifty years perhaps; and all this to save the price of a pair of half-worn shoes! No child should be fitted with shoes without putting on two pair of thick woolen stockings, and the shoe should go on moderately easy even over these. Have broad heels, and less than half an inch in thickness.

Tight shoes inevitably arrest the free circulation of the blood and nervous influences through the feet, and directly tend to cause cold feet; and health with habitually cold feet is an impossibility.

That parent is guilty of a criminal negligence who does not always see to it that each child enters the church and school-house door with feet comfortably dry and warm. Grown persons of very limited intelligence know that, as to themselves, damp feet endanger health and life, however robust; much more so must it be to the tender constitution of a growing child. I have never known a shoemaker, whether in sending home a pair of new shoes or old ones repaired, to fill leaving several pins or iron nails to project through the sole on the inside.

The result is, that often in a single day, the excitement of play preventing a child from noticing any discomfort, the stockings

are cut through in several places and ugly sores are made in the soles of the feet, to be an annoyance and a trouble for a week afterward; beside the unnecessary work given to an already overworked mother in mending the stockings. To avoid the results of such inexcusable neglect, and also to make it more sure that pins and nails should not "work through" by the shrinkage of the leather, and also to keep the feet dry, there should be worn between the leather of the shoe and the stocking a piece of cork, or soft, thick pasteboard, lined at the bottom with a piece of oiled silk, and on the upper side touching the stocking the lining should be of Canton flannel; each person should have two pair of these, to be worn on alternate days.—*Half's Journal of Health.*

RAW HIDE.—How few persons know the value of raw hides! It seems almost strange to see them sell all their "deacon" skins for the small sum of about thirty or forty cents. Take a strip of well-tanned raw hide, an inch wide, and a horse can hardly break it by pulling back—two of them he can hardly break any way. Cut it into narrow strips and shave the hair off with a sharp knife, to use for bag strings: the strings will outlast two sets of bags. Farmers know how perplexing it is to lend bags and have them returned minus strings. It will outlast hoop iron (common) in any shape, and is stronger. It is good to wrap around a broken thill—better than iron. Two sets of raw hide halters will last a man's lifetime—if he don't live too long. In some places the Spaniards use raw hide log chains to work their cattle with, cut into narrow strips and twisted together, hawser fashion. It can be tanned so that it will be soft and pliable like harness leather.

QUINCES FROM CUTTINGS.—Take off the cuttings in autumn—good one year shoots, with a little older wood—plant them out either late in autumn or very early next spring; if left till spring they should be kept over in moist earth. They grow best in a compact, not a gravelly soil. We succeed best from autumn setting, mulching the surface of the earth with two inches of clear horse manure, which not only protects from cold of winter and the drought of summer, but enriches the soil. Spring planting also needs mulching. In the absence of manure forest leaves may do. The cuttings should be about 8 or 16 inches long, the upper end cut off, so as not to project more than an inch or two out of the ground, which should be trodden compactly about them, especially below. They may be planted in trenches cut with a spade by a line, and the cuttings be about half an inch apart in the row.

Artificial Fish-Breeding.

Stephen A. Almsworth, President of the Western New York Fruit Growers' Society, gives the following interesting accounts of fish-breeding. He says:

"I have taken a very great interest in the growing of brook trout artificially in ponds on my place. I have tried from seven years' old down to last spring's hatching, in three different ponds, keeping the young fry until two years old before I put them into the large pond with the older ones, at which time they are able to take care of themselves. The original stock was put in my large pond, containing sixty-one square rods of ground, fourteen feet deep, supplied from springs, three years ago last spring, 1400 in number, age then from one to four years old. They weigh now from one to three pounds each. They have been fed daily with liver, and are about as tame as kittens—come at call, and take their food like pigs, throwing themselves clear out of the water in their haste for the food, by the five hundred at a time, and even take it out of a spoon six inches above the water. Think of seeing five hundred trout, all at the same instant, weighing from one to three pounds, and from twelve to eighteen inches long! The like has never been seen in this country to my knowledge, before. It will well pay the discipline of Sir Isaac Walton a long journey to see visitors from hundreds of miles come to see them—ponds and fixtures for breeding and growing.

"The trout spawns in November, December and January. When on their spawning beds I take them and exude their own artificially, and impregnate them with milt from the males, and then place the spawn in troughs, on gravel with pure spring water running over them. They hatch in seventy-eight days, and commence feeding from forty to fifty days after, during which time they live on the eggs attached to them.

"Last fall I took in this way about 60,000 eggs, and hatched say 40,000 of them, which are now from two to four inches long. With all things right, nearly all will hatch in this way. These will grow to a pound weight in four years, with good water and plenty of food.

PREMIUMS FOR 1864.—GREAT INDUCEMENTS TO FORWARD "A GREENBACK."

We would call the attention of our readers and the State Press to our splendid premiums for the opening of 1864:

1st. We offer the MICHIGAN FARMER, (one of the largest agricultural monthlies in the Union,) and a *Fine Pocket War Map*, or 25 *Triumph d'Gand Strawberry Plants*, for a new \$1 subscriber—best premium ever offered for a single name.

2d. For three new \$1 subscribers, 1 *Delaware Grape Vine*, one of the finest known in grape culture, or two of the large hardy *Concord Vines*.

3d. For Six new \$1 subscribers, either of the following books which should be in the hands of every farmer in Michigan:

"*Liebig's Natural Laws of Husbandry.*"

"*Jenning's Cattle and their Diseases.*"

"*Randall's Practical Shepherd.*"

"*Barry's Fruit Garden.*"

Or Six of "*Kidder's Secrets of Bee-Keeping.*"

4th. For Eight new \$1 subscribers, 250 *Triumph d'Gand*, or 2 *Delaware* and 2 *Concord vines*.

5th. For Ten new \$1 subscribers,

One "*Liebig's Natural Laws of Husbandry.*"

One *Delaware Vine*. Two *Concord Vines*, and 50 *Triumph d'Gand Strawberry Plants*, or five varied premiums for ten names.

6th. For the largest list (not less than 75) we offer one AIKEN'S FAMILY KNITTING MACHINE, price \$75—the most skillful piece of mechanism known—we have knit a pair of socks on it in 12 minutes, it runs 5000 stitches per minute easily. Whoever gets the largest list by February 1st, 1864, secures this useful household article. It is worth more than any sewing machine, as the farmer spin his wool into yarn, manufacture it into socks and realize a profit in the market of 200 per cent. on the raw material.

7th. For the second highest list not less than 50,) ONE HUNDRED CONCORD VINES, this enables the person sending a list of fifty to give each a premium, and have fifty left for his own use or enough to plant fine vineyard.

8th. For third highest list, (not less than 30) ONE PAIR OF CHESTER WHITE PIGS, the most profitable and best Pork stock now known. These are from the stock of D. P. Bushnell, of Hartford, Trumbull co., Ohio, who took all the premiums at our State Fair of 1862.

These three last premiums will be awarded on 1st of Feb., 1864. The *Grape Vines* and *Strawberries* will be open until March, and forwarded in time for early Spring planting, with directions for setting out. The *War Map* and *Books* will be sent immediately upon receipt of lists.

No premiums sent unless designated when the

subscription is forwarded, as it occupies more time than we can afford to spare, in writing for information as to which premium is wanted.

For Club rates see last page.

We trust that every one of our friends will endeavor to get as goodly a number of subscribers as they can for the New Year. Let them prove their wishes for the success of the MICHIGAN FARMER, not by words, but by efforts to increase its list two-fold the coming year. Let farmers rally and support A HOME PAPER, which has stood unwaveringly for the interests of HOME PRODUCERS. If the farmers of Michigan would withdraw their patronage from the foreign agricultural sheets and bestow it at home where it should give, we will agree to publish A WEEKLY PAPER within the next ninety days, which shall be devoted to Agriculture, War and other news, Household Reading, and contain the best Market Reports for their information as to the profitable disposition of their Grain, Wool, Stock, Fruit and Farm Products in general, to be found in Michigan. Shall we receive the requisite support to publish A WEEKLY FARMER'S FAMILY JOURNAL IN THIS STATE?

Rolling Pasture Lands.

The rolling of pasture lands is advisable in all cases where it is judiciously performed. The effect of the roller upon grass lands is beneficial, not merely from the fact that it smooths and consolidates the surface, but it protects the roots from the injurious effects of drought, destroys or prevents the formation of ant-hills, and will often prove destructive to moles, as well as many other enemies to pasture lands. But in order to secure these beneficial results, the greatest caution should be exercised. On this subject Dr. Wilson says:—"Rolling must be judiciously performed under suitable circumstances of the land, else it will bruise the herbage, damage the roots, close the pores of the soil, and, in general, do vastly more harm than good. It ought, if circumstances permit, to be performed about a fortnight before the field begins for the season to be depastured; and it ought never, in any circumstances, to be performed when the sward is quite dry, and when the soil, or the seat of the roots is sufficiently yielding to prevent the bruising of the leaves, or the rupture of the roots beneath the pressure of the roller. Sandy and semi-elastic soils, may be rolled at any time when their sward is dry; but clay lands may be rolled advantageously, only when any little lumps or inequalities on their surface crumble with the pressure of the foot and are not flattened and consolidated, but enter softly and wholly into the combination with the surrounding soil.—But whenever a sward is in the compact and tenacious condition, which is technically known as hide bound, rolling even under the most favorable circumstances, would injure rather than improve it, and scarifying must be practiced instead, to loosen the surface, to give the roots new facilities for absorbing and producing herbage, and, if thought desirable, to serve also as a powerful precurrent aid to the beneficial operation of a top-dressing of manure."—*Cultivator*.

A NEW REMEDY FOR THE BORER.—In conversation with one of our subscribers the other day, he casually stated that his apple trees were not troubled by that pest, the borer. Upon inquiry we learned that he applied the earth and substance taken from where his sink-spout emptied, to the trunk, or rather round the collars of his apple trees each autumn, and then dug it away or removed it the next summer. He considered this an effectual remedy, as the borer did not trouble them, any further, it was good dressing for the soil around the tree, after being dug away. Of course the soil where the spout emptied would have to be renewed yearly, by supplying a cart-load of earth, soda, &c., to absorb and hold the refuse liquid.—If not used in this manner, the slops from the sink should always be added to the compost heap, or applied to the garden crops during the growing season, as they are too valuable and rich in fertilizing material, to be wasted.—*Maine Farmer*.

THE MICHIGAN FARMER.

DETROIT, JANUARY, 1864.

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All Business Communications in regard to Subscriptions or Advertising should be addressed directly to BOND & SNYDER, Publishers of the Michigan Farmer, Detroit in order to ensure immediate attention.

TO POSTMASTERS.

We often receive returned papers, with merely the name of the subscriber upon them, and not the town, in such cases it is difficult to find them, as we are obliged to go over 200 pages of names. Will they please to add the name of the Post Office. "Postmasters are responsible for the subscription of a newspaper or magazine, as long as they allow it to be received at their office, after it is uncalled for, or refused by the person to whom it is directed. The Postmaster General requires that a written note shall be sent to every publisher, that his paper of works lie dead in that office."

MICHIGAN STATE AGRICULTURAL SOCIETY.

WINTER MEETING.

OFFICE OF MICH. STATE AGRICULTURAL Soc'y, }
 DETROIT, DEC. 28, 1863. }

The Executive Committee of the Michigan State Agricultural Society, at a meeting, held on the 17th instant, resolved that the Annual Winter Meeting of the Society should be held at Ypsilanti, on Tuesday, the 9th day of February at Follett Hall, which has been placed at the disposal of the Society, for this purpose; and, that it shall last four days, during which the subjects, named below, will be introduced by brief essays or lectures, and then discussed, by all who may desire to speak on them, in the following order:

1st. Tuesday Afternoon—How can the State Agricultural Society best accomplish the objects for which it was established, by its exhibitions?

2d. Tuesday Evening—Fruit, and fruit culture, in Michigan.

3d. Wednesday Afternoon—Sorghum and sugar manufacture.

4th. Wednesday Evening—The Agricultural College, and the experiments made at that institution with muck and composts.

5th. Thursday Afternoon—Stock raising, and the comparative value of the breeds of cattle.

6th. Thursday Evening—Farming considered with regard to the profit of scientific management.

7th. Friday Afternoon—Sheep culture, and the profits and prospects of wool growing.

8th. Friday Evening—Agricultural practice.

During the forenoon of each day, the attention of the executive committee will be given to the general business of the Society, and the preparation of the Programme for 1864, in accordance with the suggestions received at the public discussions.

A local committee, of citizens of Ypsilanti, consisting of Messrs. J. Starkweather, C. Yost and D. M. Uhl, has been appointed to receive the members and visitors who may attend this agricultural convention, and which it is believed will be one of the most important of the kind ever held in Michigan.

CULTIVATION OF THE NATIVE THORN FOR HEDGES.

BY SAMUEL HOWARD, KALAMAZOO.

The Native Thorn in whatever part of the country found growing will be found superior to every other tree or shrub for a hedge. It does not attain to a very great height on any soil—on an average not more than ten feet. It grows the thriftiest on new and uncultivated lands—on old fields it is but a dwarf tree. But it will adapt itself to grow on almost all kinds of soil. The young trees shoot up from the seed to the height of about six or eight feet in five or six years.—Their fruit generally resembles in appearance the crab apple, but on some trees it resembles the pear, has five seeds, and is red.

Sheep or cattle do not browse on the young shoots of this tree. Therefore it will grow without protection. Cattle delight to browse down almost all kinds of forest trees and shrubs that are not poisonous—and they take peculiar pains to break down the tops of the young trees, and an ox may be seen busily employed, occasionally from day to day trying to break down with his horns the stem of the tree, leaving but a short stump above ground, and he generally succeeds in snapping it off. But nature is not to be conquered in this way, she sends up new shoots the next year, and again and again they are browsed down, and the new shoots spring up again, till at length after many years the farmer sees in his cleared field a tree growing with a beautiful top, though a somewhat crooked stem—a complete triumph of over its enemies, the beasts of the field. But no such warfare is waged against the Native Thorn not a leaf, not a shoot is hurt, being armed with weapons of self-defence the same as the ox, it grows unmolested wherever the seed comes up, and is calculated when growing thick in a hedge to make a barrier that no animal can pass through—and through which the Bulls of Bashan would not attempt to make breach.

The White Thorn that is cultivated in England and Ireland for hedges is not more suitable there for a hedge than our Native Thorn is here for the same purpose—and this tree thus created for this very useful purpose will soon be applied to such use as a living fence undecaying and impassable from generation. The White Thorn of England and Ireland in its native state grows to a greater height than the American Native Thorn. A Native Thorn should be made around the woodlands in the country. By striking a straight furrow with a plow of sufficient depth, and being nicely fitted, the thorn apples or berries may be sown therein covering them three or four inches in depth (generally on dry lands deeper,) in the fall of the year; they will come up in abundance, if sown thick the next season, if wet, but if dry they will come slower. If too thick, they may be thinned out. If not thick enough they may be transplanted or filled up by sowing again. And this hedge without trimming or clipping will live as long as the other trees of the woodlands.

The seeds of the thorn are covered with a shell as hard as that of any other seed, and comes up slowly, sometimes not till the second season.—They may be prepared for sowing by gathering any quantity wanted in the fall, and digging a smooth hole in the ground, where they will not be disturbed, pour them in, and cover them with earth. As soon as the frost is out of the ground, or the trees begin to flow, take them out and they will be in good condition to sow immediately covering them up according to the nature of the soil, and they will come up sooner or later as the season is wet or dry. In this section of country a part of the seed is blasted and will not grow which may be ascertained by cutting open, therefore it may be better to sow the thorn apples whole. For hedges more ornamental than fields, or on road sides intended to be cultivated and clipped, that is by cutting off the top and side shoots annually, so as to attain to a certain height if they stand within a foot of each other they will be thick enough.

Farmers who cultivate the thorn for a hedge will have a fence as good and as durable as that made of stone, or with red cedar posts and it will remain in its usefulness to be seen by their children's children, when they themselves shall sleep with their fathers.

PRUNING GRAPE VINES.—Now is said to be the best time in all the year for pruning the surplus wood from the grape vines. Cuts made at this season of the year will harden dry and sound, and there will be no leakage of sap, as in the case when pruning is delayed until toward spring.

THE WHEAT PLANT.

LOUIS BOLLMAN,

In Report from the Department of Agriculture.

The Mildew, or the Rust and its Remedies.

The oldest of our histories, the Bible, frequently alludes to it as common among the Jews, and represented it as one of the punishments inflicted on that disobedient people. They were warned that disobedience would be followed "with blasting and with mildew;" and when thus punished, the prophet Haggai says: "I smote you with blasting and with mildew, and with hail, in all the labors of your hands; yet ye turned not to me saith the Lord." The Hebrew name for the rust, *yarcoon*, meaning a yellow color caused by moisture, is indicative of the cause and appearance of the disease then as we find them now. The Grecian and Roman writers have transmitted to us like names and causes. The Greeks called it *erustee*, and the Romans *rubigo*. Ovid describes the *rubigalia*, a religious festival established by one of the earliest rulers of Rome, making the priest say, "If the sun fervently heats the moist stalks, then, O dread goddess, is the opportunity for thy dread wrath. Be merciful, I pray, and withhold thy rusting hands from the crops."

In all times and among every people, this disease existed, and a moist stalk heated by a hot sun is the cause of it; hence heavy dews precipitated by clear, cool nights, succeeded by a hot sun during the day, soon develop the disease now as it did in the most ancient periods. It was not until the microscope was invented that the true nature of the disease was known. There is a species of plant which lives on the sap of other plants, called parasite. The rust and smut are plants of this character. The microscope shows the fact that rust is a perfectly-formed plant, having roots, stems, and branches, and producing seed too small for the unaided eye to discover. These exist in innumerable quantities in the atmosphere, awaiting the condition essential to their germination and development. What these are we have already seen. In the language of Ovid, they are the sun fervently beating on the moistened stalks. When this moisture proceeds from showery weather, no danger need be apprehended; but when from dews precipitated by cool nights, then the rust rapidly develops itself. Whether the moisture in drying so rapidly causes a contraction of the outer portion of the stem so as to induce splitting, or whether the coolness of the night causes it, is not certainly ascertained. Be this as it may, the result is the same—an imperceptible spitting of the straw through which the sap oozes out. The invisible and multitudinous seeds of the rust attach themselves to this sap, and bury-

ing themselves in it, rapidly vegetate, striking their roots in the openings of the straw, thus diverting to themselves the sap of the plant, which should go to the filling out and ripening of the grain. Hence it so rapidly shrivels, and often becomes worthless.

What is the remedy against this evil? The Romans sacrificed a red bitch on the altar of the Goddess Rubigo, the priest entreating her to withhold her rusting hands. If the farmers could be persuaded to sacrifice all bitches to the goddess, then an altar ought to be erected to her on every farm, for the indirect benefit to the wheat crop by increased sheep husbandry would more than compensate all losses from the rust.

The Jewish prophets regarded the blasting and mildew as a punishment for the sins of the people. When a people by rebellion, under such high condition of prosperity as exhibited by the census of 1860, seeks its own and the destruction of others, and the overthrow of the best government the world has seen, blasting and mildew of the wheat crop will not stay their impious hands. But, regarding the remedy for rust, through the microscope we find that it is not in all stages of the growth of the plant that the straw is liable to split under heavy dews and a hot sun. It is not in its growing state, but in its ripening stage only, that this result is produced. Hence, whatever rapidly shortens the ripening stage lessens the danger. For this purpose there is nothing equal to stable manure, the precise effects of which on the soil and on the wheat crop will be stated under the head of manures. Another remedy is in immediate harvesting when the crop is affected by the rust. The following instructive experiments on this point I find in Mr. Klippart's essay on wheat. Mr. George D. Hendricks, of Preble county, Ohio, writes Mr. Klippart as follows:—"In 1842 I had a large field seriously affected by rust, and, having read in the *Genesee Farmer* the necessity of early cutting, I put a hand cradle to work and left; was absent a few days, and, on my return, found my hand had only cut a few dozen of sheaves, avowing that it was so green he knew it would be worthless. I then procured hands, and had the field cut, but too late for more than half a crop, whilst the portion cut at first was plump, and had well-filled grains."

"In 1840 I had three fields of wheat of equal size; about the 20th to the 25th of June the rust made its appearance in its worst form. The cholera being in the country, hands were hard to procure. I however procured two cradles, and set them to work in field No. 1; soon left for the day, and, on my return home, was vexed to find my foreman had abandoned the field, with the declaration that if I was fool enough to cut wheat

so green, he was not! I explained, entreated, and finally got the field cut on *Monday* and *Tuesday* of the week, leaving the wheat in the swath, unbound, until it partly cured in the sun before binding. Field No. 2 was left, partly to meet the views of my hands, and partly to mark the difference, as an experiment, until *Thursday* and *Friday*, when it was cut and shocked. Field No. 3 having been put in by a tenant, and under his control, was left until the *Monday* following, though I urged him to have it harvested sooner. On *Monday* all hands were ready for the work, but on close inspection there was *nothing* but straw to cut, and hence the field was left unharvested."

"*The result.*—Field No. 1, although it was the poorest set or stand by at least one-fourth, produced twelve measured bushels of wheat to the acre, weighing fifty-six pounds to the bushel.—No. 2 yielded eight bushels to the acre, weighing only forty-six or forty-eight pounds to the bushel, while the third field, fully equal to the second field in every respect, and the same kind of wheat (white chaff bearded) produced nothing. Again, in 1857, (last year,) the great damage. So soon as discovered I 'pitched into' field No. 1, cutting and shocking the same day. The crop was so green I had to reopen the shocks and many of the sheaves to cure them, to keep from moulding, as I also did in field No. 1, in 1849. Field No. 2 was left a week, being a late sown field; and again had a field No. 3 in charge of tenant, who obstinately refused to cut it until ripe."

"*Result.*—No. 1 produced twenty-five bushels to the acre; weight, sixty-four pounds to the bushel, and as full, flinty wheat as I ever saw.—No. 2, being only half set, injured by the fly and freezing out, produced ten bushels to the acre, weighing fifty-six pounds; but in this field, and in the poorest point in it, (clay land,) I had manured one acre in the centre of the field, and on which was, at least, thirty bushels of No. 1 wheat. Neither the rust nor the fly had affected it. No. 3 yielded (though a good set) some eight bushels to the acre, and the wheat so poor it could not be sold, and I am using it for feed."

The result of these experiments are like others that have been made. But we see from them how very reluctant farmers are to cut wheat until it is fully ripe, and hence the heavy losses sustained from the rust. The season of the above results is found in the ripening process of the wheat plant. From ten days to two weeks in the United States before it is fully ripe the stem of the wheat plant will be found turning yellow immediately at the ground, indicating that the roots have ceased to supply further the plant with sap. Hence whatever sap and nutritious elements are

yet necessary to fill out the grain must be in the stem and leaves. These the rust plants appropriate to themselves whilst the wheat remains uncut. But it is evident from the foregoing and similar experiments that the cutting *destroys the life of the rust plants*, leaving to the grain the sap and nutritious elements still in the stem. Every farmer has observed that when maize is cut up green, in a few days the grain will be shriveled and loose on the cob; but in two or three weeks, when the stalk is pretty well dried, the grain is full and tight on the cob. This arises from the continued course of sap to the cob, and from it to the grain. If this is the case with the maize, where the action of the root continues until the ear is thoroughly ripened, how much more likely is it to be the case with the wheat plant, whose roots cease their action before the maturity of the grain? How or in what way harvesting the crop destroys the vital action of the rust plant I have no means of determining; but it is worthy the most careful microscopic observation.

The Smut and its remedy.—The disease of the wheat crop destroying the grains of the wheat by enclosing in the husk a fetid black powder is known as the smut. It is the most singular of all parasites. This powder, when viewed through the microscope, is seen to be a collection of small seeds, which adhere to the wheat when all are thrashed together. Whilst growing, the wheat plant absorbs these seeds with the sap which enters the roots, and when thus introduced into the interior of the plant, they germinate and use the sap of the plant and its entire organization, even to the husks of the grain, to the production of its own seeds. The plant thus affected by smut does not grow as large as a healthful one, and exhibits a very dark green appearance from the blackened sap within. It is said that heads have been found containing some good grains and some smutted ones, but I have never seen any such, and doubt whether it is possible for such a mixed growth to be.

How long the seeds of smut can retain their vitality when lying on the soil, or what are the conditions extending or limiting their vitality, I have no means of ascertaining. A neighbor, very particular to eradicate every head of smut from his fields by sowing no seed at all mixed with it, or allowing a smutted stalk to mature, stated to me last season, with all his care, he found a good many heads of smut in his wheat.—Upon inquiry, I found that they were in the vicinity of an old decayed straw pile which he had scattered, and which had some smut in it when threshed. From this it would seem that the seeds are capable of retaining their vitality for several years when mixed with straw. I am making an

experiment to test their vitality on the ground, having hogged down a field of wheat with much smut in it, arising from the use of bluestone in insufficient quantity to destroy the smut. The remedy against smut is by soaking the seed wheat in washes of different kinds, among which is that of dissolved bluestone, having considerable strength, during one night, and then mixing quicklime with the still wetted wheat. Another is to use salt instead of bluestone, soaking the same time and followed by the same application of quicklime. These destroy the vitality of the smut seeds. Should these seeds lose their vitality when exposed on the soil, or by an intervening fallow crop, the careful farmer, by these steps, can easily protect himself against this parasitic plant.

3. *Does wheat turn to Cheat?*—I may here dwell for a moment on that vexed question whether wheat turns to cheat. I have examined, very carefully, many fields of wheat sown on very poor ground, and on good ground, in years when the wheat froze out badly, and at times when it did not. In no case have I seen the slightest evidence that such transformation took place. I have seen wheat plants with scarcely any life in them—short, stunted, with but two or three grains in the head, and of a most sickly color. These were in very poor ground, and much injured by freezing out. There was plenty of cheat among them, but these all had the healthy growth—the dark green color—altogether different from that of any wheat plant, with its form of leaf and stalk as different. Wheat and cheat are sometimes found growing apparently out of the same stem, but so have trees of entirely different kinds. When traced out the stems had their own roots.

Cheat is a peculiar plant. It came up so thickly on a field added by purchase to the farm on which I am residing, that I cradled it for feed, finding it better than oats for horses. I cut it too ripe, and the ground was covered with seed. The same fall I had it ploughed up and drilled in rye. Scarcely any cheat was seen the next season.—The ground was not disturbed, and the following season it again came up thickly. Mr. George W. Lane, of Aurora, Indiana, a few years ago presented to the State Board of Agriculture of that State a specimen of cheat, accompanied with the statement that his own and his neighbor's old and well-established timothy meadows, where hay is raised and baled for the southern market, instead of producing timothy, had that year yielded a good crop of cheat, which they had cut for hay, but without knowledge of its value. This statement exhibits the peculiarity of the cheat plant. It is a most excellent hay, and is altogether a too respectable plant to be the product of a badly put-in wheat-field.

The parasitic enemies of the wheat-field are the Hessian fly, the chinch bug, and the midge.

1. *The Hessian fly and its remedy.*—The received account of the introduction of this fly into the United States is known by every person, for its common name refers to it. That it was brought in some straw with the Hessian troops, employed in the revolution against us, is possible; but the history of like pests shows that sooner or later they spread over the whole earth where their favorite food may be grown and climate influence will permit. The bee moth and the curculio are instances of the fact that nearly all the products of the farm have their enemies. It is not necessary to describe this fly, nor particularize the nature of its depredations, except to say that it deposits its eggs, from twenty to forty in number, in the hollow of the blades of the wheat. The egg hatches a small, light-colored worm, in from four days to three weeks, according as the weather is warm or cool.

The worms crawls down the leaf between the sheathing of the leaf and the stem, firmly fixes itself there, sucking the juices or sap of the plant on which it lives. It gradually becomes imbedded in the stem by the latter growing around it. As it increases in size, it becomes, in color, size, and shape, like a flax seed; hence this state of the larva is called the flax-seed state. In this condition it remains during the winter, unaffected by the severest cold. In May it is changed into the fly, and this fly lays its eggs higher upon the same stalk, and on others around it, and also on the spring wheat. These eggs hatch, and the worms undergo the same changes until in August, when they appear as flies, ready to deposit eggs on the young fall wheat plants. The fact that of so many eggs but few hatch (for not more than two or three worms are found in the same plant) shows that the Hessian fly has its deadly enemies. This is true, two of which I will notice, being parasites of this parasite. Both these are flies, one of which deposits its eggs within the egg of the Hessian fly. Both these eggs hatch, but the worm from the last-deposited egg is within the worm of the Hessian fly, and it lives upon it, gradually destroying it, until, having undergone its various changes, it emerges from the skin of the Hessian worm a fly, ready to deposit its eggs in those of the Hessian fly. The other parasitic insect lays its eggs in the larva when in the flax-seed state, which hatches within it and lives upon it. It is to these friendly insects we owe the fact that the Hessian fly does not spread over large districts of the wheat region, nor, indeed, in any part of it to any great extent, and that it is seldom destructive in the same place for more than a season or two. The friendly flies, by their

rapid increase, soon drive the Hessian fly to other portions of the country in order to shun their fatal attacks. The usual remedy against the Hessian fly is late sowing of the winter wheat. Whilst this may afford some protection, it leads to habitual late sowing, by which the plant is weakened, and rendered less able to endure the changes of our winters. A greater loss is thus occasioned than would result from an occasional entire destruction of the crop by the fly. A strong-rooted plant will more easily overcome a serious attack of the fly than a late sown and weak one can resist the freezing out to which it is certain to be exposed.

2. *The Chinch bug.*—In the northwestern States this bug has not been destructive, but in Missouri and in the southern States it has been at times a severe scourge. I have seen it but once, and then it quickly disappeared, doing no material injury. In the latter part of the last century it first appeared in the south, rapidly multiplying until its vast numbers destroyed every green plant. All crops are its prey—the maize and the grasses, as well as the cereals. They cover every portion of the corn plant, and suck out its sap so rapidly that it wilts as if it had been cut down. No remedy to lessen its numbers or to mitigate its ravages is yet known. A wet season is fatal to it, as to most other of the noxious insects.

3. *The Midge.*—With this insect I have no personal acquaintance; but the census report of 1800 tells its destructiveness in New York in the greatly decreased wheat product of that State. In 1850 it produced 13,121,498 bushels, and in 1800 but 8,681,100 bushels.

There appears to be a difference between writers on the character and habits of this fly, but Asa Fitch, of New York, must be regarded as the best authority, from his personal inspection of it, and from his thorough knowledge of whatever relates to the injurious or beneficial insects of the farm. In his report to the State Board of Agriculture of New York, it is stated, that although it was not before known in this country, yet it suddenly appeared over many portions of the New England States and of New York, and that this was accounted for by the remarkably prolific character of the insect. It commences to bear when but three days old, and produces four young daily; thus in twenty days the progeny of a single midge is upwards of four millions. It has existed in Europe, and is there mentioned as depositing its eggs in the soft grain of the wheat in June and July; but here, he says, it is on the field always, sucking out the juice of the young plants, causing them to wither and die. As yet he has been unable to find a male among them; seemingly all appear to be females; and that it

has no natural enemy in this country as it has in Europe. The New York State Agricultural Society has imported these enemies with the hope of diminishing the ravages of this noxious insect. In one particular it is different from other insects. Dry weather is favorable for their existence and reproduction, but unfavorable for the midge. It not only attacks the cereals, but the grasses also; and hence, if grain-production was abandoned for some years, it would not tend to diminish the number of this destructive insect. In Mr. Klippart's essay I find it described as a small, yellow fly, which appears about the middle of June, and during the early part of the evenings deposits its eggs on the heads of the wheat just before it blooms, and when it begins to open its coverings of leaves. When the larvæ are hatched they are white, but soon turn yellow, and live on the juices destined to fill the grain, which they appropriate, either wholly or partially, to themselves. When their growth is attained, they spring off the head to the ground and pass into the earth at the root of the plant, where they remain until transformed into the fly. No remedy has been found against its destructiveness, except by means of the propagation of its natural enemy. This is a dark fly that deposits its eggs within that of the midge, as in the case of one of the enemies of the Hessian fly. The worms hatched from these live within and upon the larvæ of the midge, but do not effect their destruction until they have left the wheat heads and descended to the earth.

The casualties affecting the wheat crop are but two—blowing down whilst in ear, and freezing out during the winter.

1. *Blowing down.*—This casualty does not often occur to a serious extent, but it is a partial evil at nearly all times. I was forced to hog down my crop this year on account of it, and the long laid-by sickle had to be used very generally in this county. This evil may be much avoided in two ways—by selecting good varieties of wheats which have stiff straws, and by returning to the wheat crop the straw of previous crops, or the manure of stock fed upon it, for both have large quantities of silica, so essential to strengthening the straw against the storms which so frequently occur before harvest time.

2. *Freezing out.*—This casualty is, perhaps, more destructive to the wheat crop than all other misfortunes to which it is incident. Freezing out is of two kinds. In the northern districts of the wheat region where the soil is light, but rich, and the winters dry and cold, the strong prairie winds blow the snow from the fields when it has not fallen in sufficient quantities, exposing the light soil to freeze into dust, which is blown from the roots of the wheat, thus laying them bare, when they

are soon destroyed by freezing. The only remedy is in substituting spring wheat for winter. The other kind of freezing out occurs in the middle and southern portions of the wheat region, where the soil is more generally a tenacious clay. This soil retains the rains, and, as there is a deficiency of snow, the water freezes, and in expanding swells the ground upwards, breaking the roots that may be below the freezing, and forcing up the remaining parts of the roots with it. A gradual thaw first melts the ice near the surface, and as the soil is freed from the water it falls from and below the roots which cannot sink down with the soil, for the lower portions of the roots are still imbedded in frozen ground. In this way most of the roots are gradually thrown on the surface, where they freeze. The remedy against this natural and wide-spread evil is to render the ground more loose by enriching it with stable manure, which will give a more ready passage to the water below the roots, and will also give a more vigorous growth to the roots; by early sowing, which gives more time for the roots to obtain such growth, and by the substitution of drill planting for broad-cast sowing. I shall recur to all under their proper heads. Having considered the nature of the wheat plant as to its varieties, elementary constituents, germination, and growth, and the diseases, enemies, and casualties to which it is subjected, and the remedies of these.

For the Michigan Farmer.

"A World of Compensations."

BY CHARLES B. HOWELL.

There are many who dislike proverbs and old sayings. Admitting that these persons have cause for this antipathy to proverbs, I think that when one expresses a manifest truth, the proverb may as well be quoted as to invent some new circumlocutory phrase to express the same idea. That "this is a world of compensations," (which quotation I am not certain is a very ancient saying, but it is often enough quoted to make it a proverb,) has never been proven more to a demonstration, than since the beginning of the traitors' war on the Union, in so vast amount as there has of labor-saving machinery taking the place of the myriads of laboring men upon the farm who have with patriotic sacrifice, left their plows in the furrow, their scythes in the meadow, and grasping the gun and sword, gone forth with their brethren throughout the North to redeem the land from treason, and purge it of traitors.

Looking at the large manufacture and sale of labor-saving agricultural implements since the War, it would almost seem that the inventors in the last quarter of a century were working their brains for the benefit of their beloved country in

its approaching hour of trial, or as if they looked at the future with the ken of a prophet. The ingenuity of a few men has been the means of giving to the country in its time of need, thousands upon thousands of those who otherwise would have been absolutely required to remain at home and till the soil.

I have not the statistics at hand to prove my assertion, but I am prepared to say that the employment of labor-saving agricultural machinery has been for the last three years, four-fold what it was in the three years preceding the commencement of the war.

In the city of Pontiac, during the spring and summer of 1863, there were sold between two and three hundred mowers and reapers. This is item is but a fair specimen of what would make up the statistics, if it were undertaken to show the large sales of agricultural implements since the war began all over the country.

These facts prove that men can seldom see the effects of their acts in all their extent, and that no one should be discouraged because he does not see immediately and extensively the consequences of his acts which he anticipated will gain him wealth and a name. Circumstances may call forth what has not before been needed, and a word, while it effects vast ill in one direction, may work great good and benefit in another.

Ann Arbor, Jan. 4, 1864.

Experiments with Manures.

A correspondent of the *N. Eng. Farmer* reports the following experiments with the different kinds of manures for Turnips, applied to the land of "shallow loam," which was enrich the year before with a green crop of buckwheat plowed under.—Four square rods were appropriated to each kind of manure. The rate per acre is given for cost and yield:

Crushed bones, 80 bushels per acre, cost \$60, 160 bushels crop. The same at the rate of 30 bushels per acre, cost \$25 50, 120 bushels crop—Three quarts lime and 2 lbs. sulphuric acid, rate of 4 bushels and 80 lbs. per acre, cost \$6, yield 80 bushels. One load of muck, 10 lbs. guano rate of 40 bushels; 400 lbs per acre, cost \$24, yield 150 bushels. Muck 40 loads, cost \$13.52, yield, nothing. Leached ashes, 400 bushels cost \$40, yield 180 bushels. Manure, 40 loads, cost \$40, yield 80 bushels. Coal ashes, 40 loads, cost \$20, yield nothing. Bone and leached ashes, 30 bushels bone and 300 bushels ashes, yield 300 bushels. The latter application appears to have been the most successful, but the cost of it is not given.

The greater part of the camphor which comes to Europe and America, is from Japan and China.

For the Michigan Farmer.

A New and Profitable Use for Cider.

Messrs. Editors,—Enclosed you will find one dollar for the *Farmer* for the ensuing year, I think the *Farmer* would be much more interesting if it could be made a weekly visitor. It looks rather strange to think that such a large population engaged in agricultural pursuits, cannot be made to perceive their interest sufficient to sustain our paper worthy of their State and of the age in which we live. The space of a month seems rather long for a people as fast as we are. Well, we shall have to wait for the mental inertia of our profession, till time shall evolve its force to give us a shock that shall force us along to that place in society, which many us think we are entitled to at this period.

I wish to call your attention to a new use to put cider to, not having seen any notice of it in the *Farmer*. It no doubt originated from observing the process of boiling the sorghum in our large pans. Sour apple cider, taken immediately from the press, can be reduced in our large copper pans very rapidly and very cheaply to a very nice jelly. One barrel will make about four gallons. The cost of boiling has been about fifty cents per barrel. Sweet apple cider makes about the same amount of molasses, and this is as nice for table use as anything that can be bought in the market. This improvement arises from the thorough process of skimming in the large copper evaporators while boiling.

I think the discovery will be of some benefit to many living in the interior remote from a ready market for apples, in seasons of a great surplus, like the past one. Apples can be very readily put into this article of luxury, kept almost any length of time, and easily transported to any part of the country, and find a ready remunerating market.

The habit of using cider as a beverage has become quite obsolete, especially in the West, where there has not been hardly a sufficient quantity of fruit for home consumption. In our State some years there will be a surplus, or in some localities such seasons as the one just past, there will be a much better use to put our surplus apples to than to make a beverage of them.

ALVIN HOIT.

Opo, to, Mich., Jan. 10, 1864.

SEX OF EGGS.—It is stated that the sex of eggs may be determined, so that a person may raise a brood of the sex he wishes. If males are wanted the longest eggs should be used, if females, those most round should be chosen. Will our readers bear this in mind and try the experiment next spring.

HOUSEHOLD WORDS.

For the Michigan Farmer.

Rural Songs—No. 4—The Rural Belle.

BY CHARLES BOYNTON HOWELL.

No gaudy plumes has she,
Nor robes of velvet and fur,
Nor yet does the grace of a *don ton's* step
Attach to the gait of her.

In technical etiquette,
Not versed is the rural belle,
And is, in the eyes of the city-bred miss,
More awkward than tongue can tell.

Of botany and of French
Most vague ideas has she,
Though the flowers that bloom in garden and field
Are her sweetest company.

"Why then," you ask, "should she
Of the neighborhood be the belle?
Patiently for a moment wait
And I will try to tell.

Because she has bright blue eyes
That glow like the morning star,
And cheeks like the blooming damask rose
When naught doth its beauty mar.

Modesty, purity, grace,
As well as beauty, are hers,
And each of the hearts of her hosts of friends
With admiration stir.

In the storehouse of her mind
Good sense and judgment stand,
And learning enough for her humble sphere
In this earthy transient land.

MICHIGAN UNIVERSITY, Ann Arbor, Jan. 1864.

A HEAVENLY FRIEND.

The following beautiful lines formed the substance of a "Donation Address" given at Walled Lake, in this State:

"A man that hath friends must show himself friendly; and there is a friend, that sticketh closer than a brother."—[Prov. 18, 24.]

As the heavens with brighter glow,
Shed their brilliant light around;
When their riches, poured below,
Have the hills, with glory crowned;
So the heart that want relieves,
In a purer air will live,
Finds it pleasant to receive,
Finds it happier still to give.

Friends that round me throng to-night,
Come to ease my earthly lot;
Come to cheer my path with light,
And to mark a verdant spot,
Should I thankless prove at last,
It would sour your hearts with pain,
Not for gifts so idly past,
But for love met with disdain.

Friends so thoughtful! friends so true!

Do not act a thoughtless part.

One has been a friend to you, who

Who deserves the grateful heart.

He awakes you, morn by morn;

All your limbs with vigor braced;

Through your veins a stream is borne,

Counteracting every waste;

Lays you down at evening's close

Sends dream-angels round your bed,

Lulling you to soft repose,

Quieting your careworn head,

Wakes the fanning breeze to blow,

Laden with its sweet perfume,

Thus to give the eye its glow,

Thus to give the cheek its bloom;

Paints the earth with varied hue;

Makes the stately tree arise;

Sprinkles gems in heaven's blue;

Feeds with light your ravished eyes.

Far away beyond the stars,

In the realms of endless day,

He another world prepares;

Glorious as 'tis far away.

Earthly eye ne'er saw its light;

Human ear ne'er heard its joy;

Mortals to conceive the sight,

Vainly would their powers employ.

In your breast a house he builds,

Thousands are the chambers there;

Every room some beauty gilds;

Every wall is painted fair.

Earth, and air, and sea, and sky,

Ages past, and years to come,

All are called on to supply

Gems to beautify the dome.

Wealth uncounted there is stored,

Richer than the famed Peru.

Sweeter strains its harp afford

Than ancient Tara ever knew.

Knocking at your door He's seen,

Like a traveller seeking rest.

Opening you may let Him in,

And receive a heavenly guest.

Through your chambers He will go

Pleased to find them to His heart;

And His look, a richer glow

To each beauty will impart.

Watch your house with special care;

Keep the cobwebs from the wall.

Let no boisterous guests impair,

Pictures which adorn the hall.

So shall He more frequent come
 To enjoy your humble fare,
 Bringing blessing to your home
 Such as mortals seldom share.
 January, 1864. B. M.

A GOOD MANAGING WOMAN.

"The managing woman is a pearl among woman; she is one of the prizes in the great lottery of life, and the man who draws her may rejoice for the rest of his days. Better than riches, she is a fortune in herself—a gold mine never failing in its yield—a spring of pleasant waters, whose banks are fringed with moss and flowers, when all around is bleached white with sterile sand. The managing woman can do anything; and she does everything well. Perceptive and executive of quick sight and steady hand, she always knows exactly what is wanting, and supplies the deficiency with a tact and cleverness peculiar to herself. She knows the capabilities of persons as well as things, for she has an intuitive knowledge of character. The managing woman, if not always patient, is always energetic, and can never be disappointed into inaction. Though she has to teach the same thing over and over again, and then she finds as dense as boxwood, and hands as inefficient as fishes' fins, still she is never weary of her vocation of arranging and ordering, and never less than hopeful of a favorable result.

The managing woman is a first-rate house-keeper. She has not abandoned those old traditions of womanhood which make the fit and beautiful dispensing of bread of equal value with the earning thereof; nor does she hold with any modern theory of degradation in household work, or shame in poverty or the need of contrivance. On the contrary, idleness and extravagance are the worst shames to her; and a woman who repudiates her natural vocation of home adornment, is no woman worthy of the name. It is when she is of the 'poor genteel' class that her special talents come into the fullest play. The best manner in which to organize her household, the wisest apportionment of her income, the most ingenious way of sewing up tattered edges, and hiding unseemly patches, the putting a bright face on her difficulties, and having the credit of 'being so nice,' when she has had to contrive and think over every possible means of making both ends meet—these are the delights of a true manager—her trophies and her triumphs. How proud she is of her faculty of making the best of everything!—How clever is her mode of veiling the cloud, and showing only the rose-colored edges and the silver linings, to her numerous friends.

The instant you enter a house, whether rich or

poor, you know whether it belongs to a clever manager or not. It is not the kind or amount of property or furniture, it is not in its newness, its grace, or intrinsic value, but it is in its disposition, in the art with which everything is made to look its best, and in the case of our 'poor genteel,' the clever hiding of deficiencies. What managing woman allows the world to see her rents and tatters? So long as ingenious patching, and still more ingenious shifting and turning, can conceal what cannot be denied, the managing woman lets none, not even the initiated, understand the ragged groundwork underneath. She moves her furniture so as to hide the shabby places; she binds her worn-out books in simple chintz coverings, clean and gay; she darns her muslin until it become a new fabric, of the nature of cross-barred cobweb, and turns her linens outside in, and inside out, till every inch is equally worn, and the whole comes to be the ragged fulfilment of its destiny. She manages as to be never wholly without funds, or short of holiday provisions, so is never taken at a disadvantage, and lets nothing pass into the dust-heap until she has extracted all the life and marrow out of it. She it is who keeps the house on those fabulous sums which drive the more lavish housewives to despair, and cause a frenzy of admiration in their less fortunate possessors, yet who always has a well-filled larder, and can produce a better supply at a moment's notice, with double her weekly allowance. She it is who, with one maid-of-all-work, gets more done, and is surrounded with daintier niceties of refinement and cleanliness, than are sometimes to be found with plush and powder; who, with her hands full to overflowing, never lets fall the smallest remnant of duty, and even contrives to hold to the skirts of some pleasures as well; who finds time for everything she has to do, and a proper place for everything she has to keep; who is never hurried and never lagging; never beforehand and never behind—but punctual, timely and exact—neither wastes her minutes in needless waiting, nor rushes after them when lost, in that frantic loseless of life common to the chasers of time. The managing woman who is not punctual is the glow-worm without its light, the bird without plumage, an anomaly out of course and time.

The managing woman has rarely unruly children. Industrious herself, she compels others to be industrious as well, and thus cuts off a large source of rebellion and disaffection. If somewhat too prone to discipline, and more inclined to repression than to freedom, she does not cultivate weeds or spend her energies in training thorns; and the souls molded by her have generally a strength and solidity never to be learned

from the weakness of indulgence. On the whole, the managing woman is one of the impersonations of womanhood. We do not claim for her any ethereal superiority or æsthetic beauty, but she is one of those healthy, practical, helpful women who serve to bind the looser particles into a more solid mass, and to give a common-sense tone to what else might degenerate into mere fine wire-drawn sentimentality. Whatever she touches she improves, and she gathers up the ragged threads wherever she finds them flying. It is enough to have these ragged threads gathered up, and all the rents darned over, to smooth out the creases, to hide away the ugliness, to order and arrange so that everything shall be at its best, and every one in their fittest place, to have the brain that can combine, the eye that can see and the hand that can execute, without demanding those higher spiritual qualities which are the soul's living food."—*Selected.*

SKATING.

This is one of the most exhilarating of all pastimes, whether on the ice, or over our parlor or hall floors, with roller-skates. In the days of "Queen Bess," some three hundred years ago, it was a favorite amusement with the Londoners, whose facilities for the same were limited to pieces of bone attached to the shoes. As lives have been lost in connection with skating, the following suggestions are made:

1. Avoid skates which are strapped on the feet, as they prevent the circulation, and the foot becomes frozen before the skater is aware of it, because the tight-straping benumbs the foot and deprives it of feeling. A young lady at Boston lost a foot in this way; another in New-York her life, by endeavoring to thaw her feet in warm water, after taking off her skates. The safest are those which receive the fore-part of the foot in a kind of toe, and stout leather around the heel only, thus keep the heel in place without spikes or screws, and aid greatly in supporting the ankle.

2. It is not the object so much to skate fast as to skate gracefully; and this is sooner and more easily learned by skating, with deliberation;—while it prevents overheating, and diminishes the chances of taking cold by cooling off too soon afterward.

3. If the wind is blowing, a veil should be worn over the face, at least of ladies and children; otherwise, fatal inflammation of the lungs, "pneumonia," may take place.

4. Do not sit down to rest a single half-minute; nor stand still, if there is any wind; nor stop on the ice or snow after the skates are taken off, but

walk about, so as to restore the circulation about the feet and toes, and to prevent being chilled.

5. It is safer to walk home than to ride; the latter is almost certain to give a cold.

6. Never carry any thing in the mouth while skating, nor any hard substance in the hand;—nor throw anything on the ice; none but a careless, reckless ignoramus, would thus endanger a fellow-skater a fall.

7. If the thermometer is below thirty, and the wind is blowing, no lady or child should be skating.

8. Always keep your eyes about you, looking ahead and upward, not on the ice, that you may not run against some lady, child, or learner.

9. Arrange to have an extra garment, thick and heavy, to throw over your shoulders, the moment you cease skating, and then walk home, or at least half-a-mile, with your mouth closed, so that the lungs may not be quickly chilled by the cold air dashing upon them, through the open mouth; if it passes through the nose and head, it is warmed before it gets to the lungs.

10. It would be a safe rule for no child or lady to be on skates longer than an hour at a time.

11. The grace, exercise, and healthfulness of skating on the ice, can be had, without any of its dangers, by the use of skates with rollers attached on common floors; better if covered with oil-cloth.—*Hall's Jour. of Health.*

GIVING IN MARRIAGE IN RUSSIA.—When the promise of marriage has been given, the father summons his daughter, who comes, covered with a linen veil, into his presence, and, asking her whether she be still minded to marry, he takes up a new rod, which has been kept ready for the purpose, and strikes his daughter once or twice, saying:—"Lo! my darling daughter, this is the last time that I shall admonish thee of thy fathers authority, beneath whose rule thou hath lived until now. Now thou art free from me. Remember that thou hast not so much escaped from sway, as rather passed beneath that of another. Shouldst thou behave not as thou oughtest toward thy husband, he in my stead shall admonish thee with this rod." With this, the father concluding his speech, stretches at the same time the whip to the bridegroom, who excusing himself briefly, according to custom, says that he "believes he shall have no need of this whip," but he is bound to accept it and put it under his belt like a valuable present.

—A witty Doctor says that tight lacing is a public benefit, inasmuch as it kills off all the foolish girls, and leaves the wise ones to grow up to be women.—*Waverly Advocate.*

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Advice to Marriageable Young Ladies.

The *Boston Journal* says, "A man is better pleased when he has a good dinner upon his table, than when his wife talks good French." Upon this the *Boston Cultivator* remarks as follows: "Will the girls approaching that interesting epoch in life, termed 'marriageable,' by our contemporary, make a note of this, as should their mothers, also, and see that the education of all who are approaching this interesting and important era in their lives, be directed as is befitting those who are to become wives and, perchance, mothers? Let every 'marriageable young lady, [in respect to age,] keep in mind, that though she speak with the tongue of a man, and is possessed with the gift of prophecy, and understands the mysteries of all languages, and all knowledges, physical and metaphysical, ornamental and musical, and yet knows not how to keep house, she is unfit to become a wife and a matron. It is easy to obtain girls and woman to teach school, to keep books, to be copyists, to sell goods, to work in factories, to work as seamstresses in shops and families, to set types, to do almost anything outside of housekeeping, and yet how exceedingly difficult it is to find one who understands the culinary arts, with all the other accomplishments of good housewifery, without which, all the other learned acquisitions are of little worth in a wife, and with the wifely attainments, the absence of all the others will hardly be missed, for the good housewife, fitted for her sphere, is the true gentle-woman.

We would not have the reader infer that we place a low estimate upon woman's literary attainments from what we have now said. Far otherwise; for we would have every 'marriageable woman,' especially, liberally educated in the largest sense of that phrase, that it is to say, she should be instructed in the mysteries of housewifery as well as in the arts, sciences, literature, and all aesthetic accomplishments. But a 'blue' who knows nothing of housekeeping, is not a help meet for any man who has a stomach as well as a soul to be cared for during his sojourn on earth. The stomach has about as much to do in the formation of the character and the reputation of a man as his creed. Hence, the cook is about as essential to the success of intellectual, moral and religious culture, as the curate."

Winter Shoes.

Hall's Journal of Health gives the following reasonable advice: Like the gnarled oak that has withstood the storms and thunderbolts of centuries, man himself begins to die at the extremities. Keep the feet dry and warm, and we may snap our fingers in joyous triumph at disease and doctors. Put on two pair of thick woolen stockings, but keep this to yourself, go to some honest son of St. Crispin, and have your measure taken for a good pair of Winter boots or shoes; shoes are better for ordinary everyday use, as they allow the ready escape of the odors, while they strengthen the ankles, accustoming them to depend on themselves. A very slight accident is sufficient to cause a sprained ankle to an habitual boot-wearer. Besides, a shoe compresses less, and hence admits of a more vigorous circulation of the blood. But wear boots when you ride or travel. Give directions also to have no cork or Indian-rubber about the shoes, but place between the layers of the soles, from out to out, a piece of stout hemp or tow-linen, which has been dipped in matted pitch. This is absolutely impervious to water—does not absorb a particle, while we know that cork does and after a while becomes "soggy" and damp for a week. When you put them on the first time, they will feel as "easy as an old shoe," and you may stand on damp places for hours with impunity.

Man is like an onion. He exists in concentric layers. He is born a bulb, and grows by external accretions. The number and character of his involutions certify to his courage and courtesy. Those of the poor are few and coarse. Those of the gentleman are numerous and fine. But strip off the scales from all and you come to the same germ. The core of humanity is barbarism. Every man is a latent savage.

FLORICULTURE.

Flowers and Children.

Flowers and children are of near kin, and too much of forcing, or too much of display, ruins their chiefest charms. I love to associate them together, and to win them to a love of the flowers. Some day they tell me that a violet or a tuft of lillies is dead; but on a spring morning they come, radiant with the story, that the very same violet is blooming sweeter than ever upon some far-away cleft in the hill-side. So you, my child, if the Great Master lifts you from us, shall bloom—as God is good—on some richer, sunnier ground!

We talk thus; but, if the change really come, it is more grievous than the blight of a thousand flowers. She, who loved their search among the thickets, will never search them. She, whose glad eyes would have opened in pleasant bewilderment upon some bold change of shrubbery or of paths, will never open them again. She, whose feet would have danced along the new wood path, carrying joy and merriment into its shady depths, will never set foot upon these walks again!

What matters how the brambles grow?—her dress will not be torn; what matter the broken palling by the water?—she will never topple over from the bank. The hatchet may be hung from a lower nail now—the little hand that might have stolen possession of it is stiff and fast! God has it.

And when spring wakens all its echoes: of the wren's song, of the blue-bird's warble, of the plaintive cry of mistress cuckoo (she faintly called her "mistress cuckoo") from the edge of the wood—what eager, earnest, delighted listeners have we, lifting the blue eyes, shaking back the curls, dancing to the melody! And when the violets repeat the sweet lesson they learned last year of the sun and of the warmth, and bring their fragrance on the air again, the blithe little spirit that welcomed them is stilled forever in the silence of the grave.

The Family of Lillies.

The varieties of this tribe of plants are numerous, and most of them well known, and quite generally cultivated, although not to the extent they deserve for their many desirable qualities. This lily is a bulbous-rooted plant, but is not, like many of the bulbous tribe, improved by being taken up yearly and replanted. On the contrary they should be allowed to remain many years without removal. The common white lily is an old favorite, and deservedly so; for in addition to their pure and lovely appearance, they possess a delightful fragrance, and as fragrant flowers are not very common, the white lily should be found in all gardens. The Tiger Lily is a very common, well known species, with orange colored flowers with black spots. Of the Martagon or Turk's Cap Lillies there are many varieties with flowers of different colors. They are quite showy, and deserving of a place in the border. The petals are much reflexed, giving them somewhat the appearance of caps whence their name.

Funkias or day Lillies, are hardy herbaceous plants, of the earliest cultivation. Funkia Japonica has white fragrant flowers, and blooms in August. Funkia Cereola has large broad leaves, and flowers a fine blue—blooms in July. There is also a variety with leaves striped with white making it quite ornamental and conspicuous.

The Hemerocallis tribe is almost identical with the Funkia; in fact they have only recently been separated. What the difference is, botanically speaking, I do not know. Hemerocallis flava is a very beautiful yellow lily, flowering in June, and is quite desirable.

But by far the finest of the lily tribes is the superb Japan Lily. Until within a few years this has been considered and treated as a tender bulb and was cultivated as a green-house plant. But they are found to be perfectly hardy, and though they may bloom a little stronger for a slight protection, yet they have stood our recent severe winters seemingly as well as our common varieties. The most common sorts are the white and the crimson spotted, but by hybridizing, many new varieties have been introduced. They are in flower in Aug.

and September, and no sight can be more attractive in the flower garden than a bed of these most beautiful lilies. They have four petals, much reflexed, and remain a long time in bloom. In addition to their great beauty of appearance, they have an exquisite odor.

Of the tender lilies to be cultivated in the house, the variety best known is the *Calla Ethiopica* or Ethiopian Lilly, much admired for the purity of its large white flowers. In the cultivation of these it should be known that being originally aquatic plants they need a great deal of water while in the growing state. They are much used at present in aquariums in which they should be placed at the bottom.—*Country Gentleman*.

WILD FLOWERS.

BY THOMAS GARDNER.

Trees, shrubbery, and flowers: all know how to distinguish them, and all know their value and importance in the adornment of taste, and in the numberless ways in which they minister to the pleasures and comforts of life.

This chapter treats only of flowers—wild flowers—flowers which every American may meet in some part of the United States, and which, by their beauty, would probably attract the attention of the most indifferent to floral charms.

"Wild flower" has not the same significance in our country that it has in most others. In that, for instance, from which we derive our language—England—native flowers and wild flowers have much the same meaning, very few being cultivated, except such as are imported from other countries, or, as we would say, "exotics."

Her territory embracing no greater area than some of our medium-sized States, the most showy of the wild flowers become well known to the inhabitants, and thus seem too common for cultivation.

Our wild flowers do not seem common to us; our country is too large for this idea. The beautiful flowers of Texas or Arkansas are as really exotics to the inhabitants of Maine as the *Fuchsia* of Peru or the *Victoria Regia* of Brazil; yet to a citizen of the United States they are "native plants"—wild flowers—of his country. In a certain sense all flowers are wild flowers. When we speak of domestic animals as distinguished from wild animals, we understand a species of changed nature which they assume by the taming process.

The transfer of wild rabbit to a cage would not cover our idea of domestication; though confined for a long term of years, it would be but a "wild" rabbit still. So most of the beautiful flowers that adorn our greenhouses and gardens are still but wild flowers that have been called from the broad field of nature's covering. Yet some flowers do undergo this taming process, and, as in the case of domestic animals when under skillful care and intelligent management, change their wild nature and assume forms and characters unknown to them in a wild state. The Pansy, the Geraniums, *Fuchsia*, Carnation, Rose, amongst many others, are instances of this changed character, most of them, in a wild state, being very insignificant weeds, or, at most, not particularly attractive wild flowers. Also, as in animals, there are many that cannot be tamed, so amongst flowers; but very few can be brought thus to change their nature by any skill thus far brought to bear on them. The sweet *Mignonette*, well known to all for its delicious fragrance, is yet the same, in every respect, as those growing wild in the south of Europe, though it has been under culture for many generations; it is, in reality, the same wild flower.

THE TUBEROSE.—Mr. Band, in his late work on flower-culture, gives the name of this plant as "Tube Rose." The editor of the *Gardener's Monthly* objects to this, and he is followed by some notes on the subject by Professor Gray, of Cambridge, who considers the writing of *Tube Rose* for *Tuberosa*, "a vulgar error." He says: "The name came, without doubt, from the phrase, *Hyacinthus Indicus tuberosa radice*, by which *Clasius* first made the plant known to botanists."

PEACH CULTURE.

At the Illinois Horticultural Convention on Tuesday Dec. 29th, Dr. E. S. Hall, of Alton, read the following Essay:

It may be an axiom in horticulture, that all of our cultivated plants do best in a soil and atmosphere that most nearly resemble that of the countries of which they are natives; and that any great removal from these conditions will require some difference of treatment at the hands of the cultivator.

It is true that the Peach will exist within wide limits of latitude; that in almost all sections of the world, where the severity of winter does not kill the tree, or whenever the cold of the southern winters is sufficient to give the trees a period of rest, the Peach tree will grow. There are facts, however, in vegetable physiology that are of the highest importance to the horticulturist. To learn the conditions of success in the prosecution of any object is a step in the direct path. Merely empirical efforts add nothing to the general store of knowledge where many conditions are combined, and it can be of no permanent value to be able from actual observation to record all changes or phenomena of a seed of the Peach form the germination and growth; to give the elements that enter into its structure; or to be able to state with accuracy the several ingredients and the exact proportions of each of which the soil is composed,—so long as the real cause of the action is unknown or unexplained, or the natural structure of plants are disregarded. Various results are produced by deviation from the laws which regulate the formation of vegetable secretions. Light and heat are the agents, though not the only agents, upon which all plants depend; and as light and heat increase or decrease, so must the treatment of plants be varied to suit the altered conditions to which we would subject them.

The Peach is generally considered to be really indigenous only to parts of Persia and China; and from the former country to have been early introduced into Italy; thence to different parts of Europe and into England about the year of 1550; thence to Spain and France, and by the colonists into the United States. But, whether the Peach is really indigenous only to the countries first named, is a question we consider upon for investigation. It was recorded by Father Hennepin, who was the first who has given us a description of the regions of Louisiana as it then was. In his voyage down the Mississippi River he describes the Peach trees discovered by him in all those regions as being of great size. Father Hennepin's statements, taken in connection with recent observations of the Creole or native sorts, by which it is known that the trees of the more southern portions of Alabama, Mississippi and Louisiana bloom from two to three weeks earlier than either the seedling or improved varieties of the North when removed to those States, has led to the belief that those sections of country may justly claim the Peach to be a native habitant of those parts of the world also.

Botanists regard the Peach and Nectarine as only slight varieties of each other, differing only in the skin, with a perceptible Prussic acid flavor in the Nectarine not contained in the former fruit. Many instances are recorded of both Peaches and Nectarines growing on the same tree and branch, without artificial aid. Horticulturists are, I believe, agreed in considering them one species of fruit, which they have arranged in four divisions, viz:

1. Peaches—those whose flesh separates freely from skin and stone.
2. The Free Stone Smooth Peaches, or Nectarines.
3. The Cling Stone Peach, the flesh adhering to the skin and stone.
4. The Smooth Skinned Peaches, or Nectarines, the flesh adhering to the stone.

There are also divisions necessary to be understood before any certain progress can be made in identifying varieties of the Peach. These relate to the leaves, and are divided into three classes:

1. Those whose leaves crenated or sawed to a moderate depth or have globular glands on the foot stalk.
2. Trees whose leaves are crenated and have ear or kidney shaped glands.
3. Those whose leaves are deeply sawed or toothed, and are without glands on or near the foot-stalk.

Let the horticultural student acquaint himself with these

several characteristics, and then divide these into two sections,—the one having large flowers and the other having small flowers. He may then proceed with the examination of fruits and will, with the aid of the distinctions named, be able to arrive at some definite results; will be able to give satisfactory reasons why this or that variety of fruit is the one under consideration. Without a correct understanding of these natural divisions of the Peach, but little knowledge can be reached in the nomenclature of sorts.

To the English much is due that has been written on the growth and cultivation of the Peach. Perhaps it is a little curious that we should have adopted so many of the principles of our transatlantic brethren in the management of our trees. They have written treatise on treatise to demonstrate the course pursued in Britain; they have provided us with Books descriptive of their modes of practice, and gardens to re-produce in our soil and climate what they have learned at home. How preposterous it would be to introduce their modes of practice into this country will appear when we consider that, out of all the known species of fruits, only strawberries and gooseberries attain perfection in their climate; and that all other fruits require specific attention to secure a limited degree of success in England, when the sun can but seldom show a disc brighter than would appear to the beholder here, when viewed through smoked glass and where the moisture in both the ground and atmosphere is in excess, a coldness of the soil exists, the effects of which it becomes of the first importance to guard against. Hence we find the English gardener reducing the roots of all plants to one type—that of the fibrous rooted that they may not penetrate to so great a depth as to be below the influence of the warmth imparted to the sun's rays.

Here, where in the mean the temperature of the earth exceeds in warmth that of the atmosphere, we have followed the example of our English cousins, and received our trees from the hands of nurserymen after the foreign sample. Nor does it appear that we have ever thought it best to inquire into how many natural divisions the roots of trees are divided, nor the reasons which have induced the English to disregard those divisions.

How few either of our orchardists or nurserymen, who have bestowed much thought on the natural requirements of the Peach tree; or have for once considered the nature of the roots with which they have to deal. Supposing, as is common, that trees with a mass of fibrous roots are such as are best suited to their wants, without recognizing the fact that nature has made the roots of all our cultivated trees of two types, viz: the one with tap roots, or with its main root extending perpendicularly downward to a great depth, those portions below the soil very much resembling the branching of a tree whose main stem or trunk tapers regularly to the top. This model or type is called deep-feeders, or tap-rooted, and to this type the Peach root belongs. The other model is known as the forcelculated, or fibrous rooted, or surface-feeders, being destitute of the main or tap root, dividing just below the surface of the soil. No models could be devised that would so clearly indicate the requirements of the two classes of roots as those described. This difference in the formation of roots may be made serviceable to the horticulturist in several ways.

When the trees of both types are planted near each other, each will seek much of its nourishment as though the other was not present. The deep-feeder will draw its food deep down in the soil; the other, owing to the more complete diversion of the roots, branching laterally just below the surface of the soil, reaching out in all directions, without penetrating to any great depth. The surface feeders will, when growing vigorously, destroy all within their reach.

By a proper mingling of the two, two plants may literally be said to grow where only one grew before. Hence it is in bringing forward an orchard that advantage should be taken of the kind of roots we cultivate.

For example most persons wish to grow some crop under the trees until they are so far advanced as to take possession of the soil. Only such plants, as are of the opposite type should be used.

Corn and potatoes are found to do well among Peach trees, Corn, deriving all its food near the surface, is, all things con-

sidered, the best crop to plant, and the one generally employed. It would be far more valuable for the object named than it is, but for the practice so universally adopted—that of forcing the trees to become surface instead of deep-feeders. To this wholesale mutilation and deprivation of the natural structure of the Peach tree is due many of the failures and diseases now so common in this country.

This tree, by nature now so well adapted to our climate and soil, and so admirably fitted by its peculiar structure to draw its support from a depth rarely affected by drouth, has, by reason of being forced to derive a scanty supply of nourishment from light and sandy soils, after the manner of surface-feeders, become so enfeebled that, in many parts of the United States, where it was formerly vigorous and productive, its cultivation is now nearly or quite abandoned.

The limits of this paper will not admit, and I do not propose if it would, to go into the whole details of planting, but simply to describe, as briefly as possible, my own mode, leaving the more technical points to be brought out by the discussions.

It is of the first importance that the soil should be deep, rich, and free from an excess of moisture to as great a depth as the roots of the tree will penetrate. If these conditions cannot be secured, better not plant at all; otherwise the attempt will cost more than the fruit will be worth.

No peach tree should be planted in ground not moved to the depth of at least three feet, and, if holes are dug instead of loosening the whole ground, they should be dug out at least 5 feet in diameter, and filled with good soil; not less than one wagon-load of manure should be mixed with the earth of six or seven holes, at the time of filling up.

Having your trees ready, and the bruised ends of the roots smoothed off, spread out the roots in the soil, where they are to remain, in as natural a position as possible; then fill in the soil, not permitting the manure to come in contact with the roots, pressing the soil about them as you proceed, until the excavation is filled even with the surrounding surface. If the tree has been planted in a hole, the earth will settle, with the tree, about three or four inches. If, however, your planting is to be done in ground, the whole of which has been deeply worked, you may put your tree three or four inches deeper than it stood in the nursery.

Since it is true that our chymists agree that barn-yard manure contains all that is essential to the welfare of our fruit trees, you may make as liberal use of it as either your convenience or purse will allow; and that, too, without troubling yourself a great deal about the specific ingredients so much needed in the development of healthy trees.

We should recollect in pruning our trees, that to the healthy action of the leaves we owe much of our success in fruit growing. They collect, through the medium of the roots and the atmosphere, all those ingredients so necessary to the vital welfare of the plant. The crude juice taken up by the roots, and all the food they absorb from the air, in them undergo that chemical change from which the structural cells are formed. Most of the improved varieties of the Peach have larger leaves than are produced by the healthy seedlings, which will direct your attention to the fact, that they must in proportion to their increased size, be fewer in number. They must be carefully cared for. If the tree is showing fruit, they must be subordinated, by careful pruning, until the fruit shall, by the demand on the tree, prevent the further formation of the leaves except at the extremity of the vertical or leading branches, that each individual leaf shall receive its full share of work in the maturing a full crop of large and high colored fruit, and, at the same time, provide the extra share of material that is needed for the safety of the fruit germs for the succeeding year.

No art can produce the sugar and certain flavors of fruit due to the agency of light and heat, nor can it impart that degree of health due to those agents. Hence it should always be remembered that no two leaves should be allowed to so far compete for light as to lessen their utmost limits of growth.

One other remark, and I am done. Were I called upon to describe two conditions of success of the most importance in the growth and management of the Peach, I should say—

1. Do all you can to restore and encourage the deep-rooting of your plants.

2. The pruning of the trees on the principle herein described.

To these add continued stirring of the soil during the period of growth, the judicious thinning of the fruit, the removal of borers, &c. Other conditions being favorable, your success will be certain.

The Sorghum Crop of 1863.

There was hardly enough done the past season in the Sorghum line to mention, but something is due the public, and it devolves upon us to satisfy the demand.

We have waited in vain to hear from those who have gone into the business largely, to know if there was any improvement on the old method of manufacturing syrup.

We hear that some have made money, while others have lost. Some have made enough to pay for an expensive apparatus, while others have not paid the cost of setting up and running the institution. The early frosts shortened the crop at least one-half, and mismanagement after the frost injured the quality of the syrup more than the frost. If our farmers want their frost-bitten corn to mature, they never cut and throw it in a pile; neither do they husk it and throw it in large heaps; nor any other crop that is liable to immediate decay; neither do they expose them to the drenching rains and scorching sun. On the other hand the corn is cut and securely shocked, to mature. So with cane,—the greener it is when cut, the longer it should stand before it is worked. One of those specimens left by me on your table, that in the larger bottle, was made nearly eight weeks after the cane was cut; it stood shocked up, with the leaves and tops on; the other specimen was made near the last of the season, of early Sorghum (some call it Tafée,) a variety from which we were able to make the best syrup that we ever made.

We want to draw out the experience of different operators for the benefit of all. We hope soon to get statistics from steam-coil operators, and then we will give general results of different operators.—T. F. FOWLER, in *Jonesville Independent*.

Heavy Fleece for a Yearling Buck.

A yearling Buck raised by R. D. Palmer, of Brooklyn, Mich., and sold to A. S. Palmer, of the same place, sheared the present season at fourteen months old 19½ pounds of wool unwashed.—He was exposed to the spring rains, or he would undoubtedly have sheared over 20 pounds. His weight after his fleece was off was 112 lbs. He was bred from a ewe purchased of Jessup S. Wood, of Lodi, Washtenaw county. We have before us a specimen of his wool which is very fair. We doubt whether a Buck has ever been bred in Michigan to exceed this at the same age.

NATURAL HISTORY.

The Ants of Africa.

I do not think that they build a nest or home of any kind. At any rate, they carry nothing away, but eat all their prey on the spot. It is their habit to march through the forests in a long, regular line—a line about two inches broad, and often several miles in length. All along this line are larger ants, who act as officers, stand outside the ranks, and keep this singular army in order. If they come to a place where there are no trees to shelter them from the sun, whose heat they cannot bear, they immediately build underground tunnels, through which the whole army passes in columns to the forest beyond. These tunnels are four or five feet underground, and are used only in the heat of the day or during a storm. When they grow hungry, the long file spreads itself through the forest in a front line, and attacks and devours all it overtakes, with a fury that is quite irresistible. The elephant and gorilla fly before this attack. The black men run for their lives. Every animal that lives in their line of march is chased. They seem to understand and act upon the tactics of Napoleon, and concentrate, with great speed, their heaviest forces upon the point of attack. In an incredibly short space of time, the mouse, dog, leopard, or deer is overwhelmed, killed, eaten, and the bare skeleton only remains. They seem to travel night and day. Many a time have I been awakened out of sleep, and rush out of my hut and into the water to save my life, and after all suffered intolerable agony from the bites of the advance-guard, who had got into my clothes. When they enter a house, they clear it of all living things. Cockroaches are devoured in an instant. Rats and mice spring round the room in vain. An overwhelming force of ants kills a strong rat in less than a minute, in spite of the most frantic struggles, and in less than another minute his bones are stripped. Every living thing in the house is devoured. They will not touch vegetable matter. Thus they are in reality, very useful [as well as dangerous] to the negroes, who have their huts cleared of all the abounding vermin, such as immense cockroaches and centipedes, at least several times a year. When on their march, the whole of the insect world flies before them; and I have often had the approach of a bashikonay army heralded to me by this means. Wherever they go, they make a clean sweep, even ascending to the tops of the highest trees in pursuit of their prey. Their manner of attack is an impetuous leap. Instantly the strong pinchers are fastened, and they only let go when the piece gives way. At

such times this little animal seems animated by a kind of fury, which causes it to disregard entirely its own safety, and to seek only the conquest of its prey. The bite is very painful. The negroes relate that criminal were in former times exposed in the path of the ants, as the most cruel manner of putting them to death.

The Fox.

Perhaps of all our untamed quadrupeds, the fox has obtained the widest and most familiar reputation, from the time of Plinay and Æsop to the present day. His recent tracks still give variety to a winter's walk. I tread in the steps of the fox that has gone before me by some hours, or which perhaps I have started, with such a tip-toe of expectation, as if I were on the trail of the spirit itself which resides in the wood, and expected soon to catch it in its lair. I am curious to know what has determined its graceful curvatures, and how surely they were coincident with the fluctuations of some mind. I know which way a mind wended, what horizon is faced, by the setting of these tracks, and whether it moved slowly or rapidly, by their greater or less intervals and distinctness; for the swiftest step leaves yet a lasting trace. Sometimes you will see the trails of many together, and where they have gambolled and gone through a hundred evolutions which testify to a singular listlessness and leisure in nature.

When I see a fox run across the pond on the snow, with the carelessness of freedom, or at intervals trace his course in the sunshine along the ridge of a hill, I give up to him sun and earth as to their true proprietor. He does not go in the sun, but it seems to follow him, and there is a visible sympathy between him and it. Sometimes, when the snow lies light, and but five or six inches deep, you may give chase and come up with one on foot. In such a chase he will show a remarkable presence of mind, choosing only the safest direction, though he may lose ground by it. Notwithstanding his fright, he will take no step which is not beautiful. His pace is a sort of leopard canter, as if he were in nowise impeded by the snow, but were husbanding his strength all the while. When the ground is uneven, the course is a series of graceful curves, conforming to the shape of surface. He runs as though there were not a bone in his back. Occasionally dropping his muzzle to the ground for a rod or two, then tossing his head aloft, when satisfied of his course. When he comes to a declivity, he will put his fore-feet together, and slide swiftly down it, shoving the snow before him. He treads so softly that you would hardly hear it from any nearness, and yet with such expression that it would not be quite inaudible at any distance—
Thoreau.

DOMESTIC ANIMALS.

For the Michigan Farmer.

DOMESTIC ANIMALS.

BY SLOW JAMIE.

No. 12.—The Elephant.

Imagine a beast twelve feet high and a head large in proportion, and yet with eyes not much bigger than those of an ox; consider that his legs are like, short legs, round thick and clumsy; bear in mind that he has scarcely any neck, but his head is almost stuck on his shoulders; remember that all his movements are awkward and unyielding, in good keeping with his clumsy build; and you would naturally think that the elephant was the stupidest of creatures; but this is one of the many instances in which appearances deceive.

The elephant and the horse are, by natural historians, classified in the same grand division. The horse is covered with soft glossy hair; the rough skin of the elephant is naked, or covered with a few scattering bristles. The slender form of the one, gives a graceful ease to his motions; the other presents a clumsy mass of bone and muscles. But they are both pachyderms, or thick skinned animals. In another respect the bear a slight resemblance. The horse has long pliant lips. With these he collects the grass; with these he picks out the choice parts of his food, from what he rejects, and does many other things for which the ox has to use his tongue. The elephant's upper lip is enlarged into a great long round trunk. It is formed of a great many layers of muscles, laid across one another in all directions, so that it can contract its trunk and lengthen it, turn and twist it, at pleasure.

This useful member is possessed at once of the most delicate sense of touch, and the greater muscular power. It can either pick a needle from the ground, or knock down a bull with a blow.—And then the animals sagacity is equal to its dexterity. It carefully observes the word and motions of the keeper, and seems to understand every word he says. At his command it will lift him on its back, or carry him round on its tusks; it will kneel down, or roll over on its side; it will utter a cry, or dance a jig.

After all this highly endowed creature is of but little use to man. In ancient times they used them in war. And among the half civilized, when this great beast was trained, and sent among the hostile ranks, with a little tower full of armed men on its back, it was formidable enough. But when the skillful and courageous Romans met this animal, they soon learned to open their ranks, to let it pass, and then closing in behind, compelled the driver to calm its fury. So at last it was

found to be more of expense than utility in the campaign.

It is still used in the East for riding and even for plowing. Some years ago Barnum used one on his farm at Iranistan, Ct. It could easily turn over a furrow three feet wide; and if you set it to gathering stones it would work away all day as diligently when alone, as if watched by a keeper; and this was more than he was willing to say of many hired men. But he found an animal that wanted sixty pounds of hay, and a bushel or two of oats in a day, to be rather expensive to keep, for economy.

Besides the elephant, docile as he is, takes turns of anger. At such times the least thing provokes him, and he runs around smashing everything in his way. About sixteen years ago an elephant in Pittsburgh saw proper to snap the chain that confined him, and move across the enclosure to pay his respects to a female, confined near him. The keeper ran for his steel pointed pole to correct him. The moment the animal saw the instrument of punishment, he uttered a cry took up the man and throwing him from him broke several of his bones. He then took to the street where he spread consternation generally. He passed thro' a warehouse tearing one wall down. After a while he overturned a barrel of apples and commenced quietly to fling them one by one, with his trunk, into his great mouth. While engaged at this pleasant occupation he paid no attention to the men who came behind him, and passing a great cable round his legs secured him.

Some years afterwards the same beast took another fit and broke away. He halted a little and they got a chain round his leg and fastened it to a great marble slab, but he ran off again, dragging it after him, like a stick of stove-wood.—Several persons were injured and he did other damage. They got a cannon out and prepared to shoot him; but in the meantime, Herr Driesbach, the celebrated lion-tamer, had succeeded in subduing him, with his powerful voice. Although the infuriated beast did not pay the slightest attention to him at first, yet afterwards, at his command, he stood still and even lay down. The brave German then got on his head and made a speech to the crowd.

I have seen this same animal, when his keeper lay down before him, turning out of his way time and again, and when he was ordered to step over him, did so with the greatest caution lest he might hurt him. He lifted each foot high over him, and then laid it down slowly, that if he should possibly step on any of his limbs, he might feel it before he pressed heavily on it.

The elephant is a slow breeder and never has any young at all when tamed. All the tame ele-

phants had to be taken wild and domesticated.—In their native wilds they are getting scarcer and scarcer, every year and in a few centuries, the elephant, like the mastodon, will only be known as a quadruped that once existed.

The Proper Way to Bit a Colt.

Farmers often put a biting harness on a colt the first thing they do to him, buckling up the biting as tight as they can draw it, make him carry his head high, and then turn him out in a lot to run a half day at a time. This is one of the worst punishments that they could inflict on a colt, and very injurious to a young horse that has been used to running in pasture with his head down.

A horse should be well accustomed to the bit before you put on the biting harness, and when you first bit him you should only rein his head up to that point where he naturally holds it, let that be high or low; he will learn that he cannot lower his head, and that raising it a little will loosen the bit in his mouth. This will give him the idea of raising his head to loosen the bit, and then you can draw the bit a little tighter every time you put it on, and he will still raise his head to loosen it. By this means you will get his head and neck in the position you wish him to carry it, and give him a graceful carriage, without hurting him, making him angry, or causing his mouth to be sore.—*Rarey.*

Effects of Roots on Sheep.

We have heard it objected to feeding turnips to sheep in winter, that they weaken the sheep. It is fair to say that we never heard this objection from persons who had fed turnips in such a way as to know what effect they really produced. Randall, in his *Practical Shepherd* says:—

"Having habitually and regularly fed turnips daily to breeding ewes, rams, and wethers, [when I have kept the latter,] for the last fifteen or twenty winters, I am able to affirm of my own positive knowledge, that green feed, administered in proper quantities, does not in the least diminish the appetite for dry feed; and that proper green feed, so far from weakening, adds to the condition and strength of the sheep, besides producing other good effects which will be adverted to when I speak of the relative value and influence of winter feeds. The experience of the great body of English farmers fully sustains these conclusions. The practice of wintering sheep exclusively on dry feed—say on meadow hay and straw, with or without grain or pulse—is substantially unknown in the arable districts of England. For sheep of every class not to receive green feed daily would there be an exception; and fattening sheep receive it in abundant quantities."

Ventilation in Bee Hives.

The Ohio Farmer says that bees in winter do not apparently suffer from cold even when many degrees below the freezing point. Their great enemy is damp. I have known hives from which the bottom board had fallen and which were fully exposed to the air, winter well, while others carefully tended lost thousands of bees, and yet both had sufficient stores. Hives made of thin boards are bad quarters for bees, unless well ventilated, and for the simple reason that when such are exposed to the weather, they part rapidly with their warmth in cold weather, and unless carried off by currents of air, the moisture from the bees condenses on the inside and then congeals, and this process will go on until the comb next the sides is involved, and the bees are constantly huddled together in an ice house. When combs are thus frozen or kept steadily exposed to an atmosphere of moisture for some time, they will mould whenever the weather becomes warm. It often happens that the principal portion of the honey is laid up in the outer combs, and if these are frozen, the bees cannot get their food and may thus starve with food abundant, but locked up by frost.

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structed that the fire had to pass through three channels before escaping. The first channel receiving the hottest flame, caused the scum and surface matter to pass to the one side where it could be easily and conveniently removed.

The Committee on seeds reported in favor of awarding the first premium on Chinese cane seed to Mr. J. B. Richard; on African, to Mr. B. Garlinghouse, judging from the samples produced as the products of the different kinds.

The Committee on syrups reported that the first premium had been awarded for the best gallon of syrup to Mr. Delamater; the second to Mr. J. L. Tallman, and the third to Mr. D. Kroh. For the greatest and best variety they awarded the premium to Mr. D. B. Kroh.

Mr. Richard said that previous to adjourning he would move that the expenses of the meeting be paid from the society's funds, and the balance to be divided among the successful competitors. The resolution was adopted.

He also moved a vote of thanks to the people of Adrian for their kindness and liberality during the sitting of the convention.

A vote of thanks was awarded to the representative of the *The Detroit Free Press*, and the *Adrian papers*, for their attendance on the occasion.

The convention then adjourned *sine die*.
—*Detroit Free Press.*

For the Michigan Farmer.

ANNUAL MEETING OF THE OHIO POMOLOGICAL SOCIETY.

This spirited society held its Annual Meeting at Toledo, on Tuesday, Wednesday and Thursday, January 12th, 13th and 14th. The meeting was called at this place, with the purpose of inducing the attendance of Fruit culturists from Northern Indiana and Southern Michigan; in which they were, to some extent, successful; as several were in attendance from Monroe, Adrian and Tecumseh, and a few from even further north. The attendance of members was very gratifying, and the proceedings throughout were marked by a degree of intelligence and spirit that speak well for the success and usefulness of the society. Under the lead of those veteran Pomologists, President Warder, and Secretary Bateham, the society can hardly fail to fill an important niche in the future history of American Pomology.

The society had, at previous meetings, adopted a catalogue of fruits, for cultivation in the various sections of the State; and, for the purpose of presenting the information elicited in a condensed form, the State is divided, in accordance with its Geological peculiarities, in Northeastern, Northwestern, Eastern, Central and Southern sections; each of which is represented by a column, in the catalogue, in which the degree of success or failure of each variety of fruit, in such section, is in-

dicated, as well as the extent to which it has been disseminated and tested.

The first business of the sessions was to revise this catalogue, in the light of the past years experience. This was done by calling on the members present from each section, separately, for remarks on each variety embraced in the catalogue, in its order; and the degree of its success was determined by vote of the members present from that section. After the revision of the lists, opportunity was allowed for the consideration of varieties proposed for additions to the lists, which were added by vote of the society, and the degree of recommendation determined by separate votes of the several sections.

On Tuesday evening, the annual address of President Warder was delivered, and was listened to with much apparent interest. Wednesday evening was also devoted to the reading of an essay, on Fruit culture in the lake region, and kindred matters, after which ensued a somewhat lengthy discussion, on insects of a horticultural, or perhaps more properly an anti-horticultural taste; the most of which, however, was devoted to the curculio and the various processes employed to circumvent him. Among these the Mathews remedy came in for a large share of notice; and, by some members, its success was strongly insisted upon, wherever thoroughly and perseveringly applied.

Thursday forenoon was devoted to the discussion of Grapes; and, so strong was the interest on this subject, and so full the discussion, that the entire morning session was consumed upon the Catawba, Clinton, Concord and Delaware. The discussions developed the fact that the Catawba can only be considered fully successful, on the islands of lake Erie, and in immediate proximity to the lake shore; and partially so in the southern portion of the State. Some were found to advocate the cultivation of the Clinton, as a wine grape, and as a passable dessert grape, after having endured the molifying effects of frost. Concord appeared to be a general favorite; and, although it was conceded to be lacking in some respects, it was generally considered on account of its vigor, hardiness and productiveness, to be "the grape for the million." There were those, however, who urged that it had already passed its day, and that it must shortly give place to other and better varieties; and that, therefore, the society's recommendation should be qualifiedly given.

Delaware was held to be strictly an amateur grape, to be planted only by thorough and discriminating cultivators, as it would be likely to fail under the treatment sure to be meted out to it by "the million." Some members objected to the idea that farmers would not give it proper at-

tention, claiming that, if they could manage a hill of Indian corn, they would succeed with this; and that the majority of vineyardists were farmers. Others thought that, although most farmers might succeed in the cultivation of the Delaware, a large proportion of those who plant but a vine or two, will fail in its pruning and management; owing to a lack of the knowledge necessary to a just appreciation of its peculiar wants.

The afternoon and evening were to be devoted to the culture and management of the vine, to wine making, and to the discussion of the smaller fruits; but the writer was compelled, by prior engagements, to forego attendance upon those sessions.

The convention was held under the auspices of the Toledo Horticultural Society; to the hospitality of whose members, those in attendance were largely indebted, during their stay; in return for which, the writer, on his own behalf, can only wish them many returns of their Annual Reunion; each better, and more profitable than the last.

T. T. LYON.

Plymouth, Jan. 18th 1864.

Plain Talk from a Farmer.

LANSING, Jan. 18th 1864.

MESSEURS. EDITORS:—Enclosed find two dollars and give me credit for the same. I have been circulating my two or three last numbers among our farmers in order to get subscribers. I have one, and encouragements for several others. I do not comprehend how any farmer can afford to do without it, the *Farmer* it deserves the thanks and support of every man that has ten fleeces of wool to sell, or has had the last five years. Because, it is the only agricultural paper that has regarded the interest of the producing classes of Michigan, with which I have been acquainted. But there is one, and only one, thing in the way of its being of almost priceless value to the wool-grower, and that is, it does not come often enough. The wool market is very fluctuating, and in order to reap the full benefits of the valuable information derived from the *Farmer*, (and we get it from no other sources in regard to prices,) we should have it semi-weekly or at least weekly, through July and August, the usual months for selling wool, cannot there be some arrangement made to meet this demand. If the farmers of Michigan regarded the *Farmer* in the same light that I do, they would have a daily instead of a monthly and obtain a useful knowledge of their own business. The true market value of their own products and the prospects of their future value, instead of reading Political trash that neither improves the head, heart or pocket. Your &c.

W. A. DRYER.

FARMERS' CONVENTION.

Since the last successful fair of the State Agricultural Society a new interest has awakened, in the Society with a full treasury as a basis is said to be of greater benefit to the farmers of Michigan. With this view they have decided to hold a winter session at Ypsilanti, on the 9th February, of the present year. This is to be an open meeting and every friend of agriculture in the State is invited to be present, in order that full and free interchange of opinion may be had as to what affects the general interests of the producer. A series of addresses and essays, which will no doubt be replete with valuable practical information has been decided upon, and we are ready to hear some gentlemen mentioned in connection with them whose names are well known to those interested in agriculture, who will, no doubt, handle their subjects in an able manner. By reference to the official call of the society, the main features may be better understood. Ypsilanti so well known for the intelligence, activity and hospitality of her citizens, is putting her best foot forward in making, a *ne plus ultra* affair. Let every farmer in Michigan who can, devote a week to the development of her vast resources, that she may stand in proper position among her sister States.—W. S. B.

For the Michigan Farmer.

That Young Cow again—Apples as Food for Milch Cows—Cattle Fastenings in Stalls.

SCHOOLCRAFT, Jan. 16, 1864.

Messrs. Editors,—Since giving you a statement of my cow in August, I have continued to carefully test her yield of milk and butter. As the weather became cooler in September it improved my unfavorable location for milk to make butter though she lessened two pounds per day of milk the average in September being 44 lbs. still produced within a small fraction of 40 lbs. of butter. In October she averaged 40 lbs. of milk, which made a fraction over 36 lbs. of butter—in November she averaged 35 lbs. per day of milk which yielded 35½ lbs. of butter. December she averaged 30 lbs. of milk per day, which made 34 lbs. of butter, and now, January 16th, she is thus far averaging in this cold month 35 lbs. of milk per day, and butter in proportion. The increase over December, I impute to giving her the skim milk and killing my pigs, in addition to her regular food of five quarts of ground oats and corn per day by measurement with a full supply of hay.

My family of three, have freely used from the commencement all the fresh milk and cream necessary for eating (and I have not yet been weaned) and culinary purposes such as gravies, berrings, coffee, &c., &c.

She has been her milk green oat blowing the of June yield, for of April and July August September October November December January

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She has been kept in yard since July, I weighed her milk a few of the last days—she was fed green oats, which averaged 49lbs. per day.—Allowing that amount from time of calving, the yield of June to 1st of August with her subsequent yield, foots up as follows. She will calve again at of April next now 3½ months.

June and July 61 days	at 49lbs per day,	2989 milk	
August 31 do	46 do	1426 do	31 butter
September 30 do	44 do	1320 do	40 do
October 31 do	40 do	1240 do	36 do
November 30 do	35 do	1050 do	35½
December 31 do	30 do	980 do	34 do
January 16 do	25 do	560 do	17 do
	230	9515	193½

Net was kept of June and July as to butter, say 75

In 7½ months 286½ lbs.
milk and cream used by family would make 87½
½ per month,

making the total amt of butter in 7½ mos of 1 cow, 300 lbs.

My cow weighed in August 1010 lbs. In the time above given, she had yielded her weight nine times and 425 lbs. over in milk, allowing her to have eaten three tons of hay at \$8 per ton, and 60 bushels of oats and corn, say equal parts at 60 and 50 per bushel which are advanced prices, and all the milk at the old price 4c. per quart, makes profit that well pays for the trouble. In my case to have a full supply of milk, cream, and butter to use as required are no small matters in housekeeping, besides the skim milk kept two hogs in fine growing condition for five months.

FEEDING APPLES TO COWS.

Now, as to my experience in feeding apples to the above cow, though a single circumstance is not sufficient to establish a fact. Early in November I commenced to give my cow an addition to her regular feed, half a bushel of apples per day of sweet, tart and sour, in three days she drank one quarter in her average quantity. I then selected all sweet apples, but no improvement after continuing 3 or 4 days I omitted them entirely, and in a few days she again increased in milk to the amount she was giving before having the apples. It might have been some accidental circumstance, or might have operated differently under different circumstances. Be that as it may, I let those I could not get made into cider rot on the ground.

FASTENING CATTLE IN STALLS.

I much like my mode of fastening cattle in their stalls. Take an iron rod two feet long, bend the ends so that when an inch or more of it is flattened out and perforated with holes for screws, bend them parallel with the rod lengthwise, so that when placed perpendicular against the front of manger, the rod will be two inches from it, before screwing on the rod put in a swivel to which attach a strong snap by a short strap or string—buckle around the animal's neck a strap with a

ring which is allowed to remain—when the animal takes its place in the stall, the snap is readily attached to the ring. The swivel playing up and down on the rod accommodates the animal when standing or laying down, gives free use of their head to feed and lick themselves, keeps them close to the manger and prevents them from backing and laying in their manure.

My stable has a raised platform of six inches on which the animals stand, and on which I bed them. The droppings fall below on the floor, and are kept dry and clean. I have seen many kind of fastenings, but like mine much the best.

Yours, &c., M. FREEMAN.

[The above is a good sound exposition of a practical farmer, and such a statement of facts cannot fail to benefit all who read it. We hope to receive many more of the same character.]

Correspondence—Potatoes and Fencing.

HILLSDALE, JAN. 1, 1864.

MESSRS. EDITORS:—I need not stop to tell you what the weather is to day, no doubt you will have experienced all about it long before it could reach you even should it go by telegraph. But it is just a fit day for a farmer to roast his shins by the fire, eat apples, &c., &c., and write a little something for the *Farmer*.

The reason many of us do not write is the fear that we cannot write well enough to be seen in print, and I of all others ought to shrink from such an undertaking, for I do not profess to know anything more about grammar than John B. Gough does about Latin.

But then I recollect the promise you made some time since. "That if we send you the rough material you would put it in due form, polish it all over nice and make it appear like fine gold, by the time it got through the hand of the printer's devil." Much has been said almost from time immemorial about large vs. small potatoes for seed. I have tried both and never realized any difference.

A word or two about fence posts, when I came to Michigan fifteen years ago, one of the first thing I did was to build about one hundred rods of board fence where now is a part of the Village of Hillsdale. Much of said fence still stands and in a tolerable state of repair, while other portions have gone to rack or been removed.

The posts were mainly sawed from good live timber (oak), and have lasted well while others sawed from dead timber (girdlings) did not pay for setting, and I would advise my brother farmers and all others who may have the fortune to read the *Farmer* to beware. If posts are light brash sap rotten, or full of worm holes don't use them except for temporary purposes.

D. BEEBE.

ALBANY LIVE STOCK MARKET.

BEEVES.—As might have been expected, the high prices of last week and the large profits realized by drovers, induced heavy shipments, and the supply is 1500 head heavier than then. This, of itself, is sufficient to depress the market, but dealers have to contend with a more serious drawback, in the inability of the two roads running to New York, furnish cars enough to get the stock there in time for this week's market. Some droves bought here last Monday were not shipped until Thursday or Friday and it is quite probable that the same will be the case this week. Those who bought here last week, and were detained sustained more or less loss, notwithstanding the upward tendency of prices and not caring to be caught in the same way again, have gone home empty handed or with unusually light purchases, leaving the Western men to get their stock to New York as best they can. The Eastern men, too, bought sparingly, so that the trade was dull from the opening to the close, and holders pressed sales at a decline of $\frac{1}{2}$ ¢ per lb., live weight—not quite so much as that, perhaps, on prima extra, which are comparatively scarce; but an average decline is at least $\frac{1}{2}$ ¢ per lb. No doubt some droves will be held over here, so that is almost certain that there will be a good supply in the yards next week.

PRICES.—The sales were limited even at the decline noticed below:

	This week.	Last week.
Premium (100 lbs.)	3- - - -	- - - -
Extra	6 18@6 60	6 40@6 80
First quality	5 00@5 60	5 50@6 00
Second quality	4 00@4 40	4 50@5 00
Third quality	2 75@3 50	3 50@4 00

SALES.—Less than one-half the receipts have changed hands and we have but few sales to notice some of which transpired early in the week, and before the decline set in.

"Honesty," 82 Michigan at \$60 $\frac{1}{2}$ head. Average 1150
Also, 16 do at 5 $\frac{1}{2}$ ¢ $\frac{1}{2}$ B. Average 1470.
Also, 38 do at 5 $\frac{1}{2}$ ¢ $\frac{1}{2}$ B. Average 1240.
Also, 45 Michigan at \$67 $\frac{1}{2}$ head. Average 1877.
Also, 50 do at 8 $\frac{1}{2}$ ¢ $\frac{1}{2}$ B. Average 1000.
R. Queen, 84 Michigan at 4 $\frac{1}{2}$ ¢ $\frac{1}{2}$ B. Average 1300.

SHEEP. too, are lower this week, the decline being equal to $\frac{1}{2}$ ¢ $\frac{1}{2}$ ¢ $\frac{1}{2}$ B. At the opening the trade was brisk enough, and without any important change from last week's prices; but the receipts are larger than was anticipated, and this fact, in connection with the limited facilities for shipping and the advance in freight on the Hudson River Railroad, caused a depression towards the close which gave buyers pretty much their own way.

HOGS.—The trade in hogs has not been so active, operations being somewhat restricted by the lack of transportation facilities. Receipts at East Albany for the week about 9000 head, the bulk of which were shipped through. The sales made were at prices ranging from 7 $\frac{1}{2}$ ¢ to 7 $\frac{1}{4}$ ¢, the outside for the heaviest and choicest lots.

DRESSED HOGS.—With the exception of two lots new choice State hogs, sold on Monday and to day at 10¢, the market has ruled steady during the week. The receipts of Western have been larger and the supply of all grades is fully equal to the demand; the weather has been favorable to receivers and they have been able to convey their consignments safely. There is not much animation in the market to day; at the current high rates packers keep away and the only purchasers made are on Eastern account and by them Western hogs are neglected. The week's sales are about 2000 head at the rates current to-day. The lot sold at 10¢ was consigned to this market by Herbert & Eldridge, of Canandaigua, to F. Bishop; it was a very choice lot and sold at the highest figure paid this season for so large a consignment. We quote—

about 70 head Western	dividing 175 B.	9 87@9 75
24 "	average 256 B.	9 62 $\frac{1}{2}$
73 "	" 300 B.	9 75
83 "	" pigs	9 87 $\frac{1}{2}$
117 "	average 338 B.	10¢

—Atlas and Argus.

NEW YORK MARKET.

Compiled for the Farmer from the latest New York advices to the date of going to Press.

FLOUR.—State and Western Flour has been more active and at rather higher prices for all grades. The demand has been from the trade, on speculation and for export, mostly from two former. The receipts are moderate, and the tendency prices at the close was upward. 77,500 sold at \$6.45@6.60 Superfine State; 7@7.20 for the low Grades of western Extra 7.40@7.60 for Shipping Ohio; 7.65@8.50 for Trade and Family Brands, and 7.65@11 for St. Louis Extra. Canadian Flour dearer and active, with sales of 5,700 bbls, including 1,300 to day, at \$6.90@7.15 for Common, and \$7.20@3.90. Advance of 25@50c.

WHEAT.—The market is more active and prices are higher, owing to the advance in exchange and gold; the demand is chiefly for export. The sales are 183,000 bus. at 1.51 for Chicago Spring; 1.50@1.53 for Milwaukee Club the inside price in store; 1.53@1.55 for Amber do. In store delivered; 1.54@1.62 for red Western, the inside rate for do. in store; 1.63@1.65 for amber do. and 1.72 for white Canada Common. Improved 5@8c. since December.

CORN.—Is firmer, but only a limited inquiry prevails. Sales of 26,600 bush. at 1.28@1.20 $\frac{1}{2}$ for mixed old western in store and 1.20@1.24 for New Jersey yellow. Slight advance 13c.

OATS. are a little better and more active. Sales of Canadian at 89@91c. western at 92@93c.

PORK.—At \$19 12 a 20 25 for old mess, \$23 for new do. a 22 for prime mess, and \$15 25 a \$17 for prime; 1,100 do. mess for March, at \$23; 1,800 do. for March and April, at \$25. Pork, it will be seen has made a large advance of from 10 to \$5 $\frac{1}{2}$ bbl. according to quality with a decided firmness.

LARD is in fair demand and firm. Sales of 2,850 bbls at 13¢, at 13¢ 13 $\frac{1}{2}$ ¢ for old, and 13 $\frac{1}{2}$ ¢ 13 $\frac{1}{2}$ ¢ for new. 1 a 2 a advance.

DRESSED HOGS.—The demand for pork is based upon the scarcity of hogs at the West, and the general impression that with moderate supplies at the North and a probable resumption of commercial intercourse with the South before the years packing can become exhausted, and prices have advanced to such high figures that the fluctuations in gold exert little or no influence. Though the demand shows some abatement one day, the trade are confident of greater activity during the succeeding day, and consequently remain very firm. The dressed hogs sold at 9 $\frac{1}{2}$ ¢ 9 $\frac{1}{2}$ ¢ for Western and 9 $\frac{1}{2}$ ¢ 10 $\frac{1}{2}$ ¢ for city. Advance of 1c. since December.

BEEF.—There has been a more active demand for Beef, and prices are steady; 4,500 bbls old, including 1,000 bbls. \$4.40 for Country Prime; \$7@8 for Country Mess; \$10@14 for Republic Western, and \$15@16 for extra Mess, Tierce Beef is firm with a fair inquiry; sales 1,500 bbls. at \$24 50@26 for Prime Mess. Prices unchanged.

BUTTER.—Choice Goshen 85c; ordinary 82; choice western 30c; ordinary 23a25c. Advanced 2 a 5c.

CHEESE.—3,000 Bds. sold at 13 $\frac{1}{2}$ ¢ a 17c. for common to choice. 2c. advance on choice.

BEANS.—In fair demand, marrow fine full sized at \$2 25 Kidney 2 85a8. Medium or blue pod 2 70a2 75; fine small pod 2 70 a 2 75, and mixed lots 2 30 a 2 75.

REMARKS.—Flour is more active than last month, and advanced—Wheat is more active and firm with a fair rise. Oats and Oats seem to have come to a stand still without much variation in price. Pork has made decided lead off and is firm, and Beef is more active. Lard, Butter and Cheese have all made a fair advance on December prices. In fact the market throughout is encouraging to farmers.

Chester White Pigs!

THE SUBSCRIBER continues to breed and ship to order Pure bred Chester White Pigs. Address

SETH A. BUSHNELL,

HARTFORD, Trumbull Co., Conn.

DETROIT MARKET PRICES,

Ending January, 23d, 1864.

Carefully corrected just before going to press, by

C. L. CROSSBY & CO.,

Commission Merchants and Dealers in Fruits, and Western Produce generally. No. 169, Woodward Avenue, Detroit, Mich.

White Wheat	per bush.	fair, prices unchanged	\$ 1 40 @ 1 58
Red Wheat	do	do	1 25 @ 1 35
Shelled, do	do	excited and advanced	1 00 @ 1 08
In the ear, do	do	do	0 85 @ 0 90
do	do	unchanged	0 64 @ 0 68
do	do	do	0 90 @ 0 95
Barley, new	per cwt.	unchanged	2 37 1/2 @ 2 50
Peas, Neshannocks,	per bu.	advanced	0 60 @ 0 75
do common	do	do	0 60 @ 0 70
Apples, per bbl. winter fruit	do	do	2 00 @ 2 25
do dried	per bush.	do	1 62 @ 1 70
do, clover	do	do	8 50 @ 9 00
do timothy	do	do	2 90 @ 3 75
do	do	advanced	2 30 @ 2 45
do	do	unchanged	1 25 @ 1 37
do	do	do	0 25 @ 0 30
do	do	do	0 50 @ 0 60
do	do	do	0 22 @ 0 24
do	do	do	0 21 @ 0 23
do	do	do	0 08 @ 0 10
do	do	do	0 28 @ 0 28
do	do	do	0 00 @ 0 25
do	do	do	20 00 @ 21 00
do	do	do	3 50 @ 4 50
do	do	do	0 07 @ 0 08
do	do	do	0 00 @ 0 06
do	do	do	0 06 @ 0 06
do	do	do	0 15 @ 0 15
do	do	do	0 18 @ 0 16
do	do	do	0 25 @ 0 30
do	do	do	1 75 @ 2 75
do	do	do	0 68 @ 0 75
do	do	do	0 50 @ 0 60
do	do	do	0 88 @ 0 45
do	do	do	0 80 @ 0 35
do	do	do	20 00 @ 21 00
do	do	do	2 90 @ 2 14
do	do	do	2 00 @ 2 75
do	do	do	20 00 @ 24 00
do	do	do	2 90 @ 2 45
do	do	do	5 50 @ 7 50
do	do	do	3 50 @ 4 00
do	do	do	6 10 @ 0 12

WOOD Unchanged.—Good Hickory, \$4.50 a 5.00. Beech and Maple \$4.00 a 4.50; mixed Wood Beech, Ash, &c., at \$3.50 a 4.00. Green ranges from 20 to 30 cents lower than well-seasoned or dry. Trade inactive.

HOGS.—Dressed hogs have been very much excited for a few weeks, and have reached almost eastern prices, running to day as high as \$3.00 a \$3.25 for extra heavy. Market closing quiet with fair prospects.

LARD.—Is quite active and prospects good for active prices. BEEF.—Dressed has been very plenty and market well supplied from the country, with low prices the shortness of Coarse Grains and high price of hay, must soon advance the prices of good beef very materially.

BUTTER.—Market is not overstocked, but there is several lots being held at both prices, yet there is not much prospect of much higher rates at present, as much winter stock has been laid in.

"ANNUAL REGISTER OF RURAL AFFAIRS FOR 1864."—We have received this very interesting illustrated Miniture Encyclopedia of affairs, connected with gardening and farming. It contains an almanac, table of work for each month, and a thousand other things interesting to the farmer, which we have not room to designate, but which he can learn by investing 25 cents in its purchase. Published by Luther, Tucker & Son, Albany, N. Y.

"THE CANADA FARMER."—We have received the first number of this new worker in the field of agriculture. It is fine in typographical appearance, and filled to the brim with matters of interest to the tiller of the soil. The "Canadian Agriculturist" is merged into it, and although regret the loss of that well conducted monthly, we still hail with satisfaction the new semi-monthly. As yet its Editor is not announced. We trust that it will meet with the fullest encouragement from the farmers of Canada, and as

"Only the river runs 'between us,'"

That the "Michigan Farmer" and "Canada Farmer" will oft join hands in a common cause. It is a large sixteen page sheet. Published by George Brown, Toronto, O. W. Terms, \$1.00 per year, issued twice a month.

"THE CASS COUNTY REPUBLICAN."—Has undergone some change in its publishing firm, Edwin L. Mead, becoming associated with Wm. H. Campbell, Esq., as publishers. The former acting as business manager and the latter as Editor. The "Republican" is a model local paper, publishing one of the best market reports that we have seen among our exchanges, on the point we would advise other rural journals to model after it. Published at Dowagiac, Mich. Terms, \$1.50 per year in advance.

"TUSCOLA COUNTY PIONEER."—This valuable local journal has changed its Editor, and John Hawker, Esq., now occupies the senior chair. His salutory is patriotic and high toned, and we have no doubt that the people of the new and prosperous county of Tuscola, will give it that support which it really merits. Terms, \$1.50 per year. Published by Wm. Lake, Jr., Vassar, Mich.

"THE MERCANTILE JOURNAL."—We have received this cheap and valuable journal for merchants in the city and country, it contains a full weekly report of the Dry Goods, Drug, Hardware, Iron and Domestic Produce Markets. Terms, \$1.00 per year, 6 copies \$5.00. Published by Wallace, Pratt, Groom & Co., New York City.

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TO FARMERS AND STOCK BREEDERS

ALL HAIL THE TRIUMPH THAT

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THOUSANDS ARE TESTIFYING TO ITS EFFICACY!

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AFTER years of study and experiment by the inventor to compound from pure Vegetable materials a Powder that should and must take the place of the thousand and one nostrums gotten up and palmed upon the public as "certain remedies" for the cure of all diseases which the brute creation are "heir to" he has produced the one heading this advertisement, and none can be genuine unless bearing our FAC SIMILE signature. The demand has been such that its sale has been chiefly confined to the State of Pennsylvania, but we have now commenced such arrangements that we are prepared to supply the numerous orders now on hand, as well as those we may hereafter receive from other States of the Union.

Knowing this Powder to possess all the curative properties here set forth, we deem a fulsome tirade of words unnecessary, seeing assured that its own merits will secure for it a ready sale. Being composed of pure vegetable ingredients, it can be safely and judiciously given to that noble animal the HORSE. Its effects are no false pampering of the system, creating a bloated carcass with a premature shedding of the hair; but on the other hand, it strengthens the digestion, purifies the blood, regulates the urinary organs, thereby improving and protecting the whole physical condition of the animal even when in an apparently healthy state.

To the Agriculturist and Dairyman it is an invaluable remedy for their NEAT CATTLE laboring under HOOF diseases, HOLLOW HORN, and other of the many complaints to which they are liable from a suppression of the natural secretions.

MILCH COWS are much benefitted by occasionally mixing with their slop or feed—it has a tendency to strengthen the animal, remove all obstructions from the milk tubes, promote all the secretions, and consequently adding much the health of the animal, and quantity and quality to the Milk, Cream & Butter.

HOOFs, during the warm weather are constantly overheating themselves, which, results in their getting Coughs, Ulcers of the LUNGS and other parts, which has a natural tendency to retard their growth. In all such cases a teaspoonful mixed in a bucket of feed and given every other day will speedily remove all difficulties, and the animal will soon increase in both Health and FAT.

TESTIMONIALS.

WASHINGTON, Jan. 7, 1863.

To William Ralston:

I have used your Cattle Powder, and would state that it possesses the qualities of toning and renovating the stomach, removing in some morbid matter. I can recommend it for all horses in private use, where the system is not too much debilitated.

J. P. TURNER, Veterinary Surgeon,
For the United States Government,
Washington, D. C.

WASHINGTON, Oct. 16, 1862.

Wm. Ralston:

Dear Sir—Having tried the Cattle Powder, manufactured by you, I consider it a good article for the diseases of Horses, and as good a preparation as there is in the market.

HIRSH WRIGHT, Asst. Veterinary Surgeon,
For the United States Government.

WASHINGTON, Oct. 21st, 1863.

Wm. Ralston:

Dear Sir,—Having had your Horse and Cattle Powder in use for some time, I most cheerfully recommend it as a good article and well worthy of public notice.

M. JACKSON,
Superintendent of the Mule Corral.

Wm. Ralston:

We have tried the Horse Powders manufactured by you, in the Corral and Hospital stables to some extent. It is highly recommended to me by the Superintendent and Veterinary Surgeon in charge.

C. M. SNOW, Gen'l Sup't.,
Asst. Quartermaster's Office, cor. G. and 22d st.,
Washington D. C.

Ersow, Baltimore Co., Md., May 20th, 1863.

The undersigned, for some time past, has had in use on his farm, "Fickardt's Cattle Powder," and from the beneficial effects derived from it, takes pleasure in recommending the article to all Farmers, as a valuable preparation, to be given to Horses and Cattle. Some of my best work horses, that were

or bad health, with little or no disposition for food, on their taking "Fickardt's Cattle Powder," soon recovered their appetite, and in a short time became fat and in a short time became fat and in good condition.

HENRY B. CHEW.

PHILADELPHIA, May 16, 1865.

Wm. Ralston, Esq.:

Dear Sir—It is with pleasure that I certify to the invaluable properties of your Cattle Powder. I have been using it for nearly eight months. In last June I was travelling, my horse became very sick, so bad that I had to return home, and apply to a Farrier. It was nearly ten months before he was fit to use, he being in such a low condition. I happened to stop in at Mr. W. White's, and saw your Cattle Powder. I made up my mind to try a package, and after using two of them, it was surprising to every one who saw the horse, to see how much he had improved in flesh and spirit. Those who had seen him before he became sick could scarcely believe him to be the same. I also recommend the Powders as being a fine thing for the urine, and also to improve the coat, as it gives it a fine, silky appearance. My friends seeing the advantage of it, have commenced using it among their Cattle. No person should be without in their stables. I have seen it fully tested, and consider it one of the best articles in use.

Yours very respectfully,

GEORGE SNYDER.

We, the undersigned, have used your Powder, at the request of our friend, George Snyder, and find it very useful among our cattle.

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